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Final Report On The Emissions Inventory For The State Of Alabama

August 1971

Prepared for
Environmental Protection Agency
Office of Air Programs

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16. Abstracts - A summary of the Emissions Inventory for the State of Alabama is presented. Point source data have been obtained from questionnaires and follow-up contacts. Area source data and assumptions are described. These data were obtained from various governmental agencies and from personal contact. The metropolitan mobile and Birmingham areas were divided into grid networks for the purpose of apportioning the emissions in these areas. All emissions are summarized in tabular form for each region and gridded area. Summary charts are given for each pollutant for each air quality control region, each gridded area and other selected metropolitan areas of particular interest.

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Air Quality Control Regions
Particulates

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FINAL REPORT ON THE EMISSIONS INVENTORY FOR THE STATE OF ALABAMA

August 1971

Prepared For

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Office of Air Programs

TRW
SYSTEMS GROUP
WASHINGTON OPERATIONS

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1. INTRODUCTION

Pursuant to the Clean Air Act of 1970, as amended, the Administrator of the Environmental Protection Agency (EPA) promulgated national ambient air quality standards for sulfur oxides, particulate matter, carbon monoxide, photochemical oxidants, hydrocarbons, and nitrogen dioxide on April 30, 1971. Within nine months of this pronouncement, each state is required to submit a plan for the implementation and enforcement of these standards for each air quality control region in the state. An initial requirement for each of these plans is an emissions inventory for each designated region, the purpose of which is to provide a basis for developing an applicable control strategy for each region.

The following report is submitted as a summary of the Emissions Inventory for the State of Alabama. The Inventory has been prepared by TRW for EPA, with the cooperation of the State of Alabama.

Point source data required for the preparation of the Inventory have been obtained from questionnaires distributed by the State Agency and follow-up contacts with individual sources. The data have been transferred to prepared computer load sheets and processed by the EPA inventory computer program.

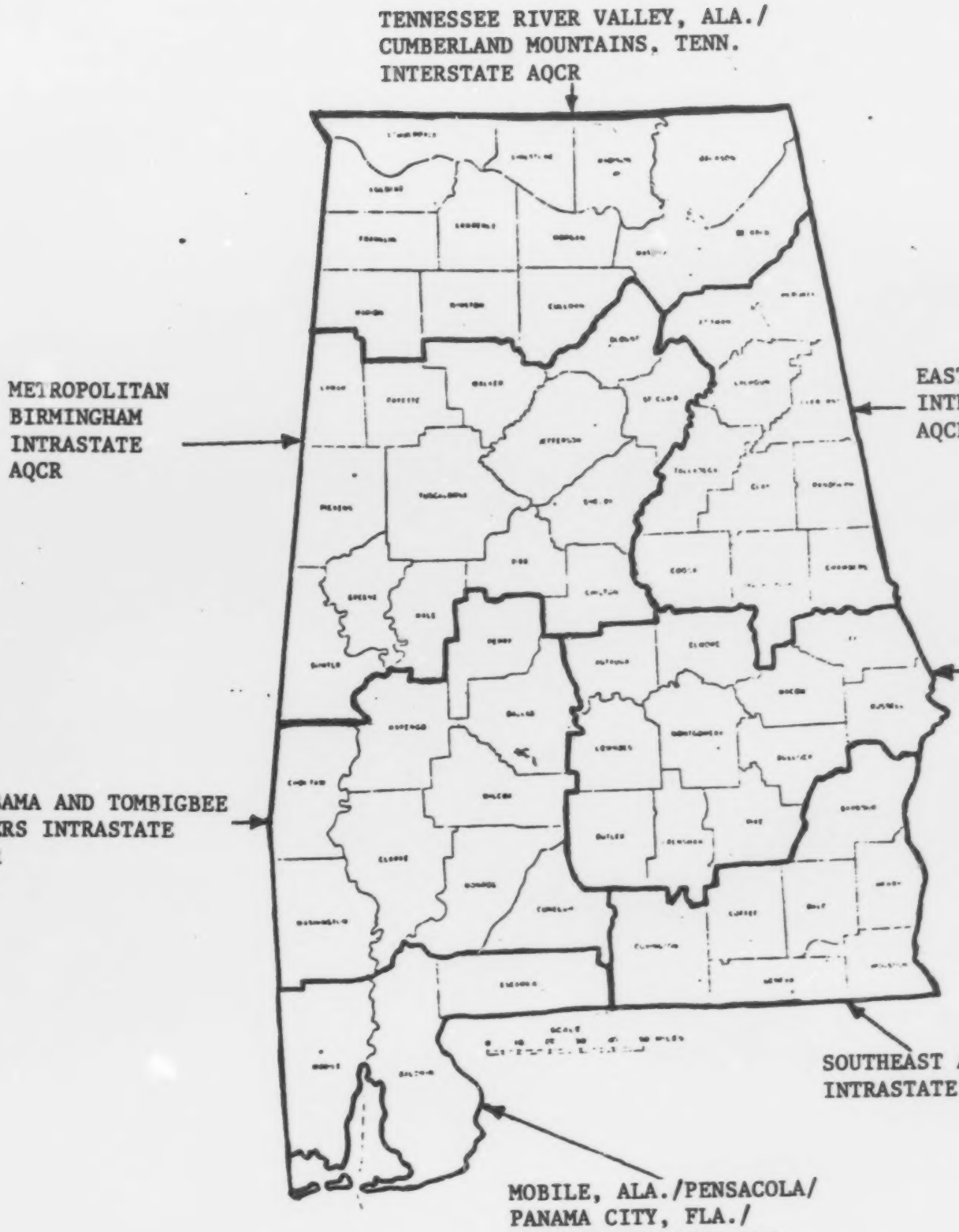
Area source data and assumptions are described in the following report. These data have been obtained from various governmental agencies and by personal contact with knowledgeable individuals. The area source data have been prepared in a similar format and computer processed.

The Metropolitan Mobile and Birmingham areas were divided into grid networks for the purpose of apportioning the emissions in these areas. All other emission totals are reported by political jurisdiction and region. Grid maps are illustrated in Appendix B of this report.

All emissions are summarized in tabular form for each region and gridded area. Summary charts have been also prepared to illustrate the major sources of each pollutant. One chart is given for each pollutant for each air quality control region, each gridded area and other selected metropolitan areas of particular interest. These summary tables and charts serve as a guide to control strategy development and selection.

2. STATE OF ALABAMA AIR QUALITY CONTROLS REGIONS

ALABAMA


TENNESSEE RIVER VALLEY, ALA./
CUMBERLAND MOUNTAINS, TENN.
INTERSTATE AQCR
METROPOLITAN
BIRMINGHAM
INTRASTATE
AQCR
EAST ALABAMA
INTRASTATE
AQCR
COLUMBUS, GA./
PHENIX CITY, ALA.
INTERSTATE
AQCR
ALABAMA AND TOMBIGBEE
RIVERS INTRASTATE
AQCR
SOUTHEAST ALABAMA
INTRASTATE AQCR
MOBILE, ALA./PENSACOLA/
PANAMA CITY, FLA./
SOUTHERN MISSISSIPPI
INTERSTATE AQCR

JURISDICTIONS INCLUDED WITHIN AIR QUALITY CONTROL REGIONS
IN ALABAMA

Alabama and Tombigbee Rivers Intrastate Air Quality Control Region (001)

In the State of Alabama:

1. Choctaw County
2. Clarke County
3. Conecuh County
4. Dallas County
5. Marengo County
6. Monroe County
7. Perry County
8. Washington County
9. Wilcox County

Columbus-Phenix City Interstate Air Quality Control Region (002)

In the State of Alabama:

1. Autauga County
2. Bullock County
3. Butler County
4. Crenshaw County
5. Elmore County
6. Lee County
7. Lowndes County
8. Macon County
9. Montgomery County
10. Pike County
11. Russell County

In the State of Georgia:

12. Chattahoochee County
13. Dooly County
14. Harris County
15. Marion County
16. Muscogee County
17. Quitman County
18. Schley County
19. Stewart County
20. Sumer County
21. Talbot County
22. Taylor County
23. Webster County

East Alabama Intrastate Air Quality Control Region (003)

In the State of Alabama:

1. Calhoun County
2. Chambers County
3. Clay County
4. Cherokee County
5. Cleburne County
6. Coosa County
7. Etowah County
8. Randolph County
9. Talladega County
10. Tallapoosa County

Metropolitan Birmingham Intrastate Air Quality Control Region (004)

In the State of Alabama:

1. Bibb County
2. Blount County
3. Chilton County
4. Fayette County
5. Greene County
6. Hale County
7. Jefferson County
8. Lamar County
9. Pickens County
10. St. Clair County
11. Shelby County
12. Sumter County
13. Tuscaloosa County
14. Walker County

Mobile-Pensacola-Panama City-Southern Mississippi Interstate Air Quality Control Region (005)

In the State of Florida

4. Bay County
5. Calhoun County
6. Escambia County
7. Gulf County
8. Holmes County
9. Jackson County
10. Okaloosa County
11. Santa Roosa County
12. Walton County
13. Washington County

In the State of Mississippi:

14. Adams County
15. Amite County
16. Claiborne County
17. Clarke County
18. Copiah County
19. Covington County
20. Forrest County
21. Franklin County
22. George County
23. Greene County
24. Hancock County
25. Harrison County
26. Hinds County
27. Jackson County
28. Jasper County
29. Jefferson County
30. Jefferson Davis County
31. Jones County
32. Lamar County
33. Lauderdale County
34. Lawrence County
35. Lincoln County
36. Madison County
37. Marion County
38. Newton County
39. Pearl River County
40. Perry County
41. Pike County
42. Rankin County
43. Scott County
44. Scott County
45. Simpson County
46. Smith County
47. Stone County
48. Walthali County
49. Warren County
50. Wayne County
51. Wilkinson County

In the State of Alabama:

1. Baldwin County
2. Escambia County
3. Mobile County

Southeast Alabama Intrastate Air Quality Control Region (006)

In the State of Alabama:

1. Barbour County
2. Coffee County
3. Covington County
4. Dale County
5. Geneva County
6. Henry County
7. Houston County

Tennessee River Valley-Cumberland Mountains Interstate Air Quality Control Region (007)

In the State of Alabama:

1. Colbert County
2. Cullman County
3. De Kalb County
4. Franklin County
5. Jackson County
6. Jauderdale County
7. Lawrence County
8. Limestone County
9. Madison County
10. Marion County
11. Marshall County
12. Morgan County
13. Winston County

In the State of Tennessee:

14. Bledsoe County
15. Coffee County
16. Cumberland County
17. Fentress County
18. Franklin County
19. Grundy County
20. Marion County
21. Morgan County
22. Overton County
23. Pickett County
24. Putnam County
25. Scott County
26. Sequatchie County
27. Warren County
28. White County
29. Van Buren County

3. METHODOLOGY

3.1 POINT SOURCES

3.1.1 Emission Factors

All point source emissions were determined using EPA Emission Factors and those emission factors built in to the computer program. Table 3-1 describes the built-in factors.

3.1.2 Data and Procedures

Data on individual sources were obtained from the point source questionnaires distributed to each source (Appendix A) and subsequent conversations with individual sources where additional information was required. These data were transferred to the point source data form (Appendix A) and keypunched for computer processing. Assumptions applied to individual sources are noted as a comment on the load sheets. The secondary fuel amounts are also given on the comment card. Coordinates for point sources are given in minutes and seconds where UTM coordinates could not be obtained to the required degree of accuracy. Some coordinates are still missing, especially in the Mobile Region. These coordinates should be entered on the computer output as they are obtained.

Stack parameters for many of the sources could not be obtained even by recontacting the source. Although these data are not required for submission with the Implementation Plan, they are required for diffusion modeling and should be obtained subsequently, if possible.

Municipal airports and Air Force bases were considered point sources, and emissions from LTO cycle were considered as originating at the location of the airport. Hydrocarbon losses from petroleum product storage were considered as area sources except in the Birmingham and Mobile regions where the individual terminal data

Table 3-1. EMISSION FACTOR SET NUMBERS

Number	Source Type	
01	BITUMINOUS COAL BOILERS	
01	General Pulverized	100 x 10^6 BTU/hr.
02	Wet Bottom Pulverized	100 x 10^6 BTU/hr.
03	Dry Bottom Pulverized	100 x 10^6 BTU/hr.
04	Cyclone	100 x 10^6 BTU/hr
05	Stoker (large commercial and general industrial)	10-100 x 10^6 BTU/hr.
06	All Other Stokers	10-100 x 10^6 BTU/hr.
07	Stoker (domestic and commercial)	10 x 10^6 BTU/hr.
08	Handfired	10 x 10^6 BTU/hr.
	ANTHRACITE COAL BOILERS	
09	Pulverized Dry Bottom	
10	Overfeed Stokers	
11	Handfired	
	FUEL OIL BURNERS	
12	Power Plant - Residual	
13	Industrial and Commercial - Residual	
14	Industrial and Commercial - Distillate	
15	Domestic - Distillate	
	NATURAL GAS BOILERS	
16	Power Plant	
17	Industrial	
18	Domestic Commercial	
19	Gas Turbines	
20	Gas Engines	

were requested and storage resulting in greater than 25 tons hydrocarbon loss were considered point sources. Several other areas of the State, i.e., Montgomery, have large storage concentrations which may contribute significantly to the local hydrocarbon emission. Data for these areas should be requested in the future.

3.2 AREA SOURCES

3.2.1 Emission Factors

All hand calculated and computer calculated emissions utilize emission factors published in "EPA Emission Factors". Fuel parameters were obtained from "The Fuel of Fifty Cities," "Atmospheric Emissions from Coal Combustion," and data obtained by the State pertaining to the sulfur and ash content of the coal seams in Alabama. Table 3-2 includes the emission factors and fuel parameters for each source category.

3.2.2 Area Source Data and Methodology by Source Category

Source Category: F1 - Residential Coal

Data: (1) 1970 distribution of bituminous coal - Bureau of Mines, Mr. Westerstraum (557-1350)
1970 Retail tons to Alabama - 150,000 tons

Procedure:

(1) Bierbaum and Gedgaudas suggest the residential fuel consumption can be assumed to be equal to one-third of the total retail consumption in the state.

(2) The 1970 Census of Housing - fuel use data are not as yet available; therefore, the 1960 Census of Housing data were used to obtain the ratio of number of housing units using coal in each county to the number of housing units using coal in the state. This apportioning factor was adjusted in counties which showed a decrease in population in the 1970 Census of Population to reflect decreases in coal use in these counties

$$\text{*County Residential Coal} = 1/3 \text{ (state coal)} \times \frac{\text{NBR Housing Units in County-1960 Coal}}{\text{NBR Housing Units in State-1960 Coal}}$$

*adjusted as described above and where local data were available.

Table 3-2. AREA SOURCE EMISSION FACTORS AND FUEL PARAMETERS

SOURCE CATEGORY (Units)	EMISSION FACTORS (lbs/fuel unit) P	SO_x	CO	HC	NO_x	FUEL CONTENT Sulfur	Ash
Residential Coal (tons)	6.80	38.00	50.00	12.00	5.00	1.00	3.40
Residential Fuel Oil (10^3gal)	10.00	5.76	5.00	3.00	12.00	.04	
Residential Natural Gas (10^6ft^3)	19.00	.60	20.00	8.00	75.00		
Commercial Coal (tons)	17.00	38.00	50.00	12.00	5.00	1.00	3.40
Commercial Residual Oil (10^3gal)	23.00	318.00	.20	3.00	60.00	2.00	
Commercial Distillate Oil (10^3gal)	15.00	120.96	.20	3.00	60.00	.84	
Commercial Natural Gas (10^6ft^3)	19.00	.60	20.00	8.00	75.00		
Industrial Coal (tons)	44.20	38.00	2.00	1.00	15.00	1.00	3.40
Industrial Residual Oil (10^3gal)	23.60	292.56	.20	3.00	60.00	1.84	
Industrial Distillate Oil (10^3gal)	15.00	144.00	.20	3.00	60.00	1.00	
Industrial Natural Gas (10^6ft^3)	18.00	.60	.40	40.00	175.00		
LP Gas (10^3gal)	6.10	.03	6.40	2.50	20.00		
Open Burning (tons)	16.00	1.00	85.00	30.00	6.00		
Incineration(tons)	7.00	1.50	10.00	3.00	3.00		
Solvent Evaporation (tons)				2000.00			
Vessels (Diesel)(10^3gal)	25.00	144.00	65.00	50.00	73.00	1.00	
Railroads (10^3gal)	25.00	65.00	70.00	50.00	75.00		
Diesel Motor Vehicles (10^3gal)	25.00	45.00	325.00	65.00	340.00		
Other (Wood, Residential Heating)(tons)	17.00	0.00	50.00	4.00	2.00		
Gasoline Motor Vehicles (25 mph)(10^3vehicle miles)	.66	.40	209.00	34.40	19.80		
Gasoline Motor Vehicles (45 mph) (10^3 vehicle miles)	.66	.40	132.00	25.60	23.20		
Wood Fires (tons)	17.00	0.00	50.00	4.00	2.00		

Source Category: F2 - Residential Fuel Oil

Data: (1) Bureau of Mines - Mineral Industry Surveys - "Sales of Fuel Oil and Kerosine in 1969"

Kerosine: 896,000 barrels x 42 $\frac{\text{gallon}}{\text{barrel}}$ = 37,632,000 gallons

No. 1 : (18,000+8,000) barrels x 42 $\frac{\text{gallon}}{\text{barrel}}$ = 1,092,000 gallons

No. 2 : 301,000 barrels x 42 $\frac{\text{gallon}}{\text{barrel}}$ = 12,642,000 gallons

No. 5 : 74,000 barrels x 42 $\frac{\text{gallon}}{\text{barrel}}$ = 3,108,000 gallons

TOTAL = 54,472,000 gallons

Procedure:

(1) Using Bierbaum-Gedgaudas assumption that one-third of the oil is residential -

Residential = 1/3 (54,472,000) - 18,157,700 Gallons

(2) The APCO Format allows for only distillate residential fuel use, therefore -

(total distillate) - (residential fuel) = 33,206,300 gallons

(3) 33,206,300 gallons = commercial and institutional distillate

(4) 3,108,000 gallons residual = commercial and institutional residual fuel oil

(5) The 18,157,700 gallons Residential Fuel Oil is apportioned into counties using:

$$(18,157,700) \times \frac{\text{NBR Housing Units Using Oil in County, 1960}}{\text{NBR Housing Units Using Oil in State, 1960}}$$

Source Category: F3 - Residential Natural Gas

Data: (1) From the "Bureau of Mines Minerals Yearbook" (1969), it is noted that 54,804 x $10^6 ft^3$ of natural gas was delivered to Alabama residences.

(2) The Division of Air Pollution Control for Alabama sent RRI data from approximately 110 gas companies. The gas amount data for most companies lacked a breakdown into residential, commercial, and industrial. Gas customers, however, were separated into the above categories. Also, all the companies reported number of customers, even the few that did not report the amount of gas distributed. The gas totals derived from these data varied from Bureau of Mines figures due to incompleteness of gas companies data.

Procedure:

(1) The Division of Air Pollution Control for Alabama sent data from approximately 110 gas companies. In order to use this information, it was necessary to:

- Determine the counties served by about half of the companies since this information was missing

- Calculate portions of the data for about 20 percent of the companies by forming ratios based on comparable data from the balance of the companies
- Group the data, which was by gas companies, into county groups for the 67 Alabama counties
- Total up the number of thousand cubic feet, number of residential customers, number of commercial customers, and number of industrial customers in each county

Until the above was performed, it was impossible to judge the completeness of the information received or to compare it with data from the Bureau of Mines or other sources.

The effort took slightly more than one man day.

The result was:

- 172,842,840 MFC total for Alabama
- 61,022,060 MCF natural gas for residential use in Alabama

The Bureau of Mines Minerals Yearbook on Natural Gas cites 280,344,000 MCF total natural gas for Alabama in 1969 of which 54,804,000 MCF were residential. (MCF indicates thousand cubic feet.)

(2) However, it was felt that apportionment of Bureau of Mines data into counties using a ratio derived from the number of customer data from the gas companies would be the most accurate of all possible methods. Hence, the ratio:

$$\frac{\text{residential customers in county}}{\text{residential customers in state}}$$

was multiplied against the Bureau of Mines $54{,}804 \times 10^6$ ft^3 figure, to get the county residential gas consumptions.

Total residential gas customers in state = 554,746.

Source Category: F4 - Commercial and Institutional Coal

Data: (1) 1970 distribution of bituminous coal - Bureau of Mines
Mr. Westerstraum (557-1350)

1970 retail tons to Alabama - 150,000 tons

Procedure:

(1) (Retail coal) - (F1) = F4 = 2/3 (150,000) = 100,000 tons

(2) County use is apportioned according to Bierbaum and Gedgaudas -

$$\text{County use} = 100{,}000 \text{ tons} \left[\left(1/2 \frac{\text{NBR county retailers}}{\text{NBR state retailers}} \right) + 1/2 \left(\frac{\text{NBR county wholesalers}}{\text{NBR state wholesalers}} \right) \right]$$

where:

153,788 = NBR state retailers and proprietors
46,120 = NBR state wholesalers and proprietors
(From Bureau of Census - 1967)

(3) It was felt that updating the 1967 Census data by interpolation would introduce additional error; therefore, it is assumed that the ratios in (2) are valid for 1970.

Source Category: F5 - Commercial and Institutional Residual Oil

Data: Bureau of Mines - Mineral Industry Surveys

Procedure:

(1) See F2.

(2) Apportioning:

$$\text{county} = \left[1/2 \left(\frac{B}{153{,}788} \right) + 1/2 \left(\frac{C}{46{,}120} \right) \right] (3{,}108{,}000 + 3{,}654{,}000 + 1{,}722{,}000) + \frac{E}{21{,}000} (14{,}448{,}000)$$

where:

3,108,000 = gallons residual oil (1969)
14,448,000 = gallons military residual oil use (1969)
3,654,000 = gallons residual oil - miscellaneous use (1969)
1,722,000 = gallons residual oil - oil company use (1969)
B = no. retail employees and proprietors (1967)
C = no. wholesale employees and proprietors (1967)
E = no. military personnel in county (1960)
21,000 = no. military personnel in state (1960)

Source Category: F6 - Commercial and Institutional Distillate Oil

Data: (1) Bureau of Mines - Mineral Industry Surveys

Procedure:

(1) See F2.

(2) Apportioning:

$$\text{County} = \left[1/2 \left(\frac{B}{153,788} \right) + 1/2 \left(\frac{C}{46,120} \right) \right] (33,668,300) + \frac{E}{21,000} (2,583,000)$$

where:

33,668,300 = balance of distillate from F2 plus 462,000 gallons distillate used by oil companies

2,583,000 = gallons distillate used by military for heating (estimated to be 1/2 to total military distillate)

(other parameters = as described in F5)

Source Category: F7 - Commercial and Institutional Natural Gas

Data: (1) The Division of Air Pollution for Alabama sent RRI data from approximately 110 gas companies. The total Alabama gas amount from these data falls short of the Bureau of Mines figure by more than 100,000,000,000ft^3. (See justification for F^3.)

Procedure:

(1) It was decided to use the Bureau of Mines data and to apportion these data using the number retailers, number wholesalers, and number of commercial users reported by the gas companies as factors.

(2) Therefore, we have: C&I Gas in -

$$\text{County} = \left[1/2 \left(\frac{X}{Y}\right) + 1/2 \left(\frac{B}{153,788} + \frac{C}{46,120}\right) \right] (35,490,000,000 + 1,785,000,000)$$

where:

X = number users reported by gas companies for County
Y = number users reported by gas companies for Alabama
B = number retail employees and proprietors for County
C = number wholesale employees and proprietors for County

(Y = 39975 for Alabama)

153,788 = number retail employees and proprietors in State
46,120 = number wholesale employees and proprietors in State
35,490,000,000 = commercial gas delivered to Alabama in ft^3
1,785,000,000 = other consumers (miscellaneous) gas delivered to Alabama in ft^3

(From Bureau of Mines Minerals Yearbook, 1969)
(Bureau of The Census, 1967)

Source Category: F8 - F11 Industrial Fuel Use

Data: (1) Bureau of Mines - Mineral Industry Surveys lists industrial use for each fuel.

Procedure:

(1) Total point source industrial fuel use for each fuel and subtract from total industrial fuel use for each fuel.

(2) Distribute remaining fuel into counties using number of manufacturing employees in county (1967) divided by number of manufacturing employees in state (1967) as an apportioning factor.

(3) Adjust county data where local industrial use is known.

Source Category: F12 - LP Gas

Data: Bureau of Mines - Minerals Industry Surveys, "Sales of LP Gas and Ethane in 1969"

Procedure:

$$\text{County} = (250{,}322 \times 10^3 \text{ gal}) \times \frac{\text{NBR housing units using LP gas in county - 1960}}{\text{NBR housing units using LP gas in state - 1960}}$$

Source Category: F13 - Open Burning - Municipal Waste

Data: (1) August 20, 1969 Survey - Community solid waste disposal - land sites - Alabama.

(2) December 1970 - Estimated solid waste burned by each county - Alabama.

Procedure:

(1) All dumps burning more than 588 TONS were considered point sources - ie.

CO: 85 lbs./TON
2000 lbs./TON x 25 = point source
588 TONS = 25 TONS CO

(2) [TONS burned] - [TONS burned in dumps] = County area sources
(County) (County)

(3) The 1970 TONS generated was based on 4 lb./capita/da. . The figure given by EPA in Emission Factors of 10 lb./capita includes commercial and industrial waste. This appears more valid, therefore, multiply TONS GENERATED, TONS BURNED and TONS BURNED IN DUMPS by 2 1/2

(4) The 1969 survey noted above was reviewed and estimates of the tonnage of solid waste burned at each dump listed were calculated. The emission factor for this category is dependent on the tons actually burned. After reviewing the basis for the individual estimates made and some limited information on dumps recently closed, it was determined that these data were not sufficient to consider the dumps listed as point sources. These burning dumps are locally significant sources of pollutants and should therefore be surveyed for an accurate estimate of tons of solid waste burned. By adjusting the per capita waste generated as given in (3) above, the open burning in dumps is accounted for as area source open burning.

Source Category: F14 - Incineration

Assumed insignificant.

Source Category: F15 - Solvent Evaporation

Data and Procedure:

(1) Dry Cleaning - Using EPA (Air Pollutant Emission Factors) p. 36 - 2 lbs./capita/yr. HC's are emitted from dry cleaning plants in moderate climates. The regional total was obtained by multiplying this factor by the population. The total was apportioned on the basis of population (1970).

(2) Surface Coating

(a) Involving the application of paint, varnish, lacquer or primer. No consumption data could be obtained on a geographical basis

(b) Contacts

- National Paint, Varnish, and Lacquer Association
- Alabama State Retail Association

(3) Petroleum Storage

(a) Bulk storage of gasoline or finished petroleum products

- Use 1967 Census of Business, Petroleum Bulk Stations and Terminals, Table 4, "Bulk Storage Capacity by County."

- Many of the terminals should be considered point sources, however, calculation of their emissions would require tank data for all of the approximately 530 terminals in the State. Therefore, in all counties except the following, fixed roof tank storage was assumed:

Hale	Mobile
Jefferson	Montgomery
Marion	Morgan
Marshall	Walker

- The above counties have large bulk storage terminals; therefore, based on Mobile and Jefferson survey data, assume 25 percent of the storage is in floating roof or controlled tanks.

- In Mobile and Jefferson counties, sufficient data were obtained to treat storage terminals as point sources.

(b) Crude Oil (refineries only)

- Treat as point sources.

(4) Gasoline Marketing

- Use EPA Emission Factors, p. 40, and 1967 county/state ratios of gasoline sales calculated from 1967 Census of Business - Retail Trade - Alabama Table 3. "Counties and Cities of 2500 or More: 1967"

- Apply this ratio to the 1970 state gasoline consumption (phone conversation - Mr. Hodges - API Statistical Division) to obtain 1970 county consumption totals.

- Assume

(a) sales ratio is a valid apportioning factor for consumption
(b) sales ratio has not significantly changed from 1967-1970
(c) 50 percent splash fill and 50 percent submerged fill

Source Category: F16 - Diesel Vessels

Data: (1) Bureau of Mines, Mineral Industry Surveys, "Sales of Fuel Oil and Kerosine in 1969," Vessel Bunkering fuel - distillate 12,012 x 10^3 gallons

(2) Survey of Mobile Harbor

- 1800 ships(70 percent - steam, 30 percent - motor)
- 3.5 days in harbor
- 26 miles channel length

Procedure:

(1) Hand calculate emissions for Mobile Harbor area.

(2) Assume residual oil used only in Harbor area

(3) Apportion remaining 11,150 x 10^3 gallons diesel fuel to counties by estimate of length of waterway in each county

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Source Category: F17 - Diesel Fuel - Railroads

Data: (1) Mineral Industry Surveys R. R. Distillate Fuel Oil 1969 - Table 10, p. 8, of Sales of Fuel Oil and Kerosine in 1969

Alabama = 1879 thousand barrels x 42 $\frac{\text{gallon}}{\text{barrel}}$ = 78918 thousand gallons

Procedure:

(1) Although total state track mileage was available, no data on a county basis were available; therefore, population is used as an apportioning factor except in gridded areas where more detailed information is available from land use surveys.

Source Category: F18 - Diesel Motor Vehicles

Data: (1) Mineral Industry Surveys - Sales of Fuel Oil and Kerosine in 1969, p. 12, Table 14. "Off Highway Diesel Type" is defined as heavy construction equipment which would still be considered a motor vehicle; therefore, the total figure is used.

Procedure:

(1) Bierbaum and Gedgaudas, p. 31, suggests using gasoline sales apportioning fractions for diesel fuel also.

(2) See F20, F21 for apportioning factors.

Source Category: F19 - Other - Wood as a residential heating fuel

Data:

(1) The 1960 Census of Housing indicates a significant use of wood as a residential heating fuel. This is most significant in the rural counties. Since the 1970 fuel characteristics from the Census of Housing are not as yet available, it is estimated that 5 percent of the total 1970 housing units are still using wood. A consumption factor of 1 ton /year/housing unit for wood is estimated from the consumption factor for coal and the BTU value of wood.

Procedure:

(1) $\text{County} = \frac{\text{1960 county wood units}}{\text{1960 state wood units}} \times \text{1970 total consumption}$

1970 consumption = 5 percent (1970 housing units) x 1 ton/unit

---

Source Category: F20, F21, Gasoline Motor Vehicles

Data:

(1) 1967 Census of Business - Retail Trade, Table 3 - Gasoline Sales by County

(2) 1970 Alabama gasoline consumption (phone conversation with American Petroleum Institute)

Procedure:

(1) From given data, calculate the following ratios for each county:

(a) $\frac{\text{county sales}}{\text{state sales}}$ (b) $\frac{\text{urban sales}}{\text{total county}}$ (c) $\frac{\text{rural sales}}{\text{total county}}$

(2) Apply 1967 sales ratios obtained in (1) to 1970 state consumption to obtain urban (25 MPH) and rural (45 MPH) consumption for each county.

(3) $\text{Consumption total} \times 12.5 \frac{\text{mi.}}{\text{gall.}} = \frac{\text{vehicle mile}}{\text{year}}$

Source Category: F22 - Other - Wood Burning by Wildfire and Prescribed Burning

Data:

(1) State of Alabama Division of Forestry - Monthly Fire Report - 1970

(2) U.S. Department of Agriculture - National Forest Service - phone conversation with Mr. Dieterich - 1970 prescribed burning totals for Alabama

Procedure:

(1) 5 tons of wood per acre of soft-wood forest (Mr. Dieterich).

(2) Total wood tonnage burned = 5 tons/acre x total acres burned in each county.

(3) To apportion state prescribed burning total to counties, assume prescribed burning only in soft-wood forests and evenly distributed by number of acres of forest in each county.

3.2.3 Grid Area Data and Methodology by Source Category

- Approximately 98 percent of the population of Mobile county is in the grid area.

- Approximately 65 percent of the physical area of Mobile county is in the grid area.

- All of Jefferson county is included in the Birmingham grid area.

Source Category: F1 - F7 - Residential, Commercial and Institutional

Data: (1) 1968 Land Use Survey - Southern Alabama Region Planning Commission

(2) Estimates of Population, Employment and Land Use - Birmingham Urban Area 1965 and 1990, (1968), Regional Planning Commission

(3) Land Use Survey - Summary Data Report (1966), Regional Planning Commission

(4) Regional Development Plan (1970), Regional Planning Commission

Procedure:

(1) The ratio of residential units in each grid to the number of residential units in the entire grid area is multiplied by the adjusted fuel consumption.

(2) The above ratios are adjusted where local fuel preference is known.

Source Category: F8 - F11 - Industrial Fuels

Data: (1) 1968 Land Use Survey - Southern Alabama Regional Planning Commission, acres of industrial land in each grid.

(2) Land use survey maps of Birmingham.

Procedure:

(1) Mobile - The acres of industrial use were estimated in each grid from the data above and used as the apportioning factor.

(2) Birmingham - No numerical data were available; therefore, an individual weighting factor was applied to each grid using the land use map.

Source Category: F12 - LP Gas

Data: (1) Land use survey maps for Mobile and Birmingham.

Procedure:

(1) LP gas was distributed evenly among grids containing farm lands and outlying grids

---

Source Category: F13 - Open Burning

Data: (1) Estimated population of each grid from land use maps.

Procedure:

(1) Multiply the population in outlying grids by 2 to reflect use of landfills in the inner city.

Source Category: F14 - Incineration

Negligible.

Source Category: F15 - Solvent Evaporation

Data: (1) Population

Procedure:

(1) Gasoline marketing and dry cleaning losses are apportioned on the basis of population.

(2) Fuel storage has been considered as point sources in Mobile and Birmingham.

Source Category: F16 - Diesel Vessels

Data: (1) Mobile Harbor Survey and Hand Calculations

Procedure:

(1) The total for this category is given as 0, and data for the individual grids is hand calculated.

Source Category: F17 - Railroad Fuel

Data: (1) Estimate of miles of track in each grid.
(2) Switch yard fuel use.

- Mobile Yard - 2238 x 10^3 gallons
- Birmingham Yards - 7709 x 10^3 gallons.

Procedure:

(1) The estimate of miles of track in each grid was used as an apportioning factor and adjusted in the grids containing switch yards to reflect the large amount of fuel used in these grids.

Source Category: F18 - Diesel Motor Vehicles

Data: Alabama State Highway Traffic Study - vehicle miles

Procedure:

(1) The calculated vehicle miles in each grid were used as the apportioning factor, assuming diesel fuel is distributed as gasoline.

Source Category: F19 - Residential Wood

Data: (1) Land Use Survey maps of Mobile and Birmingham

Procedure:

(1) Total fuel was distributed evenly among outlying grids.

Source Category: F20, F21 - Gasoline Motor Vehicles

Data: Alabama State Highway Traffic Study

Procedure:

(1) Data have been hand calculated using Alabama State Highway Traffic Study.

Source Category: F22 - Wood Fires

Data: (1) Land Use Survey maps

Procedure:

(1) Tons of wood burned are evenly distributed among forested areas.

4. REGIONAL SUMMARY TABLES

EMISSIONS INVENTORY SUMMARY FOR THE STATE OF ALABAMA
ALABAMA AND TOMBIGBEE RIVERS INTRASTATE AIR QUALITY CONTROL REGION
DATA REPRESENTATIVE OF CALENDAR YEAR 1970

SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
FUEL COMBUSTION							
Residential Fuel - Area Source							
Bituminous Coal	1	4	5	1	1	206	tons
Distillate Oil	5	29	3	2	6	1018	M gal
Natural Gas	18	1	19	7	70	1862	MMCF
Wood	91	0	268	21	11	10708	tons
Other - LP Gas	82	0	86	34	268	26832	M gal
Total	197	34	381	65	356		
Comm., Instl. & Ind.							
Bituminous Coal - Area	1522	1357	173	59	515	71444	tons
Bituminous Coal - Point	1529	4442	80	26	1334	149800	tons
Distillate Oil - Area	36	472	0	4	92	3087	M gal
Distillate Oil - Point	10	44	0	2	37	1240	M gal
Residual Oil - Area	24	218	0	4	99	3298	M gal
Residual Oil - Point	25	2582	1	24	489	16288	M gal
Natural Gas - Area	20	0	15	18	109	2116	MMCF
Natural Gas - Point	47	1	1	129	933	6442	MMCF
Process Gas - Point	0	0	0	0	0	0	MMCF
Wood - Area							
Wood - Point	2773	337	306	306	1535	306742	tons
Other - Point							
Total	5986	9453	576	572	5143		
Steam Electric Power Plant							
Anthracite Coal	0	0	0	0	0	0	tons
Bituminous Coal	3612	4803	85	25	1527	169653	tons
Distillate Oil	0	0	0	0	0	0	M gal
Residual Oil	0	0	0	0	0	0	M gal
Natural Gas	0	0	0	0	0	0	MMCF
Other							
Total	3612	4803	85	25	1527		
TOTAL FUEL COMBUSTION	9795	14290	1042	662	7026		

EMISSIONS INVENTORY SUMMARY (continued)

SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
PROCESS LOSSES (Total)	20569	2659	31273	1347	0		
Area Sources	0	0	0	1347	0	1347	tons
Point Sources	20569	2659	31273	0	0		
SOLID WASTE DISPOSAL							
Incineration							
On-Site - Area Source							
On-Site - Point Source	1021	9	7137	1102	137	222935	tons
Municipal, etc. - Point Source	0	0	0	0	0	0	tons
Open Burning							
On-Site - Area Source	1446	90	7684	2712	542	180790	tons
On-Site - Point Source	273	6	1200	240	62	35910	tons
Dumps - Area Source							
Dumps - Point Source							tons
Other - Area Source							
Other - Point Source							tons
TOTAL SOLID WASTE DISPOSAL	2740	105	16021	4054	741		tons
TRANSPORTATION - Area Source							
Motor Vehicles - Gasoline	311	189	79965	14287	9924	944370	M ve mi
Motor Vehicles - Diesel	90	161	1165	233	1219	7168	M gal
Aircraft (Point Source)	840	153	1830	1980	382		
Railroad	60	155	167	119	179	4760	M gal
Vessels	34	198	89	69	100	2750	M gal
Other							
TOTAL TRANSPORTATION	1335	856	83216	16688	11804		
MISCELLANEOUS - Area Source							
Agricultural Burning							
Other - Wild Fires & Prescribed Burn.	1587	0	4668	373	187	186700	tons
TOTAL MISCELLANEOUS	1587	0	4668	373	187		
GRAND TOTAL							
Area Source	5327	2874	94307	19290	13322		
Point Source	30699	15036	41913	3834	6436		
Total	36026	17910	136220	23124	19758		

EMISSIONS INVENTORY SUMMARY FOR THE STATE OF ALABAMA
COLUMBUS-PHENIX CITY INTERSTATE AIR QUALITY CONTROL REGION
DATA REPRESENTATIVE OF CALENDAR YEAR 1970

SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
FUEL COMBUSTION							
Residential Fuel - Area Source							
Bituminous Coal	7	39	51	12	5	2040	Tons
Distillate Oil	9	50	4	3	10	1724	M gal
Natural Gas	69	2	73	29	274	7312	MMCF
Wood	151	0	444	36	18	17771	Tons
Other - LP Gas	98	0	102	40	320	32007	M gal
Total	334	91	674	120	627		
Comm., Instl. & Ind.							
Bituminous Coal - Area	2098	1958	422	125	707	103089	Tons
Bituminous Coal - Point	147	57	2	0	28	3142	Tons
Distillate Oil - Area	88	1192	1	12	230	7652	M gal
Distillate Oil - Point	1	5	0	0	3	95	M gal
Residual Oil - Area	57	484	1	11	227	7569	M gal
Residual Oil - Point	45	364	0	7	162	5367	M gal
Natural Gas - Area	53	1	49	35	251	5649	MMCF
Natural Gas - Point	221	8	5	508	2207	26347	MMCF
Process Gas - Point	0	0	0	0	0		MMCF
Wood - Area							
Wood - Point	2938	191	284	284	1420	284199	Tons
Other - Point	0	0	0	0	0		
Total	5648	4260	764	982	5235		
Steam Electric Power Plant							
Anthracite Coal							
Bituminous Coal							
Distillate Oil							
Residual Oil							
Natural Gas	7	0	0	19	97	967	MMCF
Other							
Total	7	0	0	19	97		
TOTAL FUEL COMBUSTION	5989	4351	1438	1121	5959		

EMISSIONS INVENTORY SUMMARY (continued)

SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
PROCESS LOSSES							
Area Sources	0	0	0	5960	0	5960	Tons
Point Sources	29014	1174	21164	2117	41		
SOLID WASTE DISPOSAL							
Incineration							
On-Site - Area Source							
On-Site - Point Source	966	0	7309	610	107	157299	Tons
Municipal, etc. - Point Source							
Open Burning							
On-Site - Area Source	2037	127	10820	3819	764	254580	Tons
On-Site - Point Source							
Dumps - Area Source							
Dumps - Point Source							
Other - Area Source							
Other - Point Source							
TOTAL SOLID WASTE DISPOSAL	3003	127	18129	4429	871		
TRANSPORTATION - Area Source							
Motor Vehicles - Gasoline	1092	662	287292	50229	35341	3308970	M ve mi
Motor Vehicles - Diesel	264	475	3432	686	3591	21121	M gal
Aircraft	552	179	12785	2630	206		
Railroad	126	329	354	253	379	10111	M gal
Vessels	13	72	33	25	37	1000	M gal
Other							
TOTAL TRANSPORTATION	2047	1717	303896	53823	39554		
MISCELLANEOUS - Area Source							
Agricultural Burning							
Other - Wild Fires & Prescribed Burn.	1831	0	5385	431	215	215400	Tons
TOTAL MISCELLANEOUS	1831	0	5385	431	215		
GRAND TOTAL							
Area Source	7993	5391	308463	61706	42369		
Point Source	33891	1978	41549	6175	4271		
Total	41884	7369	350012	67881	46640		

EMISSIONS INVENTORY SUMMARY FOR THE STATE OF ALABAMA
MONTGOMERY COUNTY AIR QUALITY CONTROL REGION
DATA REPRESENTATIVE OF CALENDAR YEAR 1970

SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
FUEL COMBUSTION							
Residential Fuel - Area Source							
Bituminous Coal	1	4	5	1	0	199	tons
Distillate Oil	2	14	1	1	3	490	M gal
Natural Gas	36	1	37	15	140	3743	MMCF
Wood	18	0	54	4	2	2153	tons
Other - LP Gas	13	0	13	5	42	4163	M gal
Total	70	19	110	25	187		
Comm., Instl. & Ind.							
Bituminous Coal - Area	709	712	249	67	237	37508	tons
Bituminous Coal - Point	0	0	0	0	0	0	tons
Distillate Oil - Area	33	277	0	7	134	4445	M gal
Distillate Oil - Point	1	5	0	0	3	95	M gal
Residual Oil - Area	64	879	0	8	168	5581	M gal
Residual Oil - Point	1	14	0	0	3	90	M gal
Natural Gas - Area	32	1	31	17	139	3359	MMCF
Natural Gas - Point	183	6	4	407	1780	20347	MMCF
Process Gas - Point	0	0	0	0	0	0	MMCF
Wood - Area							
Wood - Point	98	0	7	7	33	6500	tons
Other - Point	0	0	0	0	0		
Total	1121	1894	291	513	2497		
Steam Electric Power Plant							
Anthracite Coal							
Bituminous Coal							
Distillate Oil							
Residual Oil							
Natural Gas							
Other							
Total	0	0	0	0	0		
TOTAL FUEL COMBUSTION	1191	1913	401	538	2684		

EMISSIONS INVENTORY SUMMARY (continued)

SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
PROCESS LOSSES (TOTAL)	13065	0	0	3811	41		
Area Sources	0	0	0	3811	0	3811	tons
Point Sources	13065	0	0	0	41		
SOLID WASTE DISPOSAL							
Incineration							tons
On-Site - Area Source							tons
On-Site - Point Source	36	0	676	57	6	10400	
Municipal, etc. - Point Source							
Open Burning							
On-Site - Area Source	506	32	2686	948	190	63210	tons
On-Site - Point Source							tons
Dumps - Area Source							
Dumps - Point Source							
Other - Area Source							
Other - Point Source							
TOTAL SOLID WASTE DISPOSAL	542	32	3362	1005	196		
TRANSPORTATION - Area Source							
Motor Vehicles - Gasoline	490	297	135752	23322	15562	1485175	M ve mi
Motor Vehicles - Diesel	139	251	1813	363	1896	11155	M gal
Aircraft (Point Source)	552	179	12785	2630	206		
Railroad	48	125	135	96	145	3859	M gal
Vessels	0	0	0	0	0		
Other							
TOTAL TRANSPORTATION	1229	852	150485	26411	17809		
MISCELLANEOUS - Area Source							
Agricultural Burning							
Other - Wild Fires & Prescribed Burn.	173	0	510	41	20	20400	tons
TOTAL MISCELLANEOUS	173	0	510	41	20		
GRAND TOTAL							
Area Source	2264	2593	141286	28705	18678		
Point Source	13936	204	13472	3101	2072		
Total	16200	2797	154758	31806	20750		

EMISSIONS INVENTORY SUMMARY FOR THE STATE OF ALABAMA
EAST ALABAMA INTRASTATE AIR QUALITY CONTROL REGION
DATA REPRESENTATIVE OF CALENDAR YEAR 1970

SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
FUEL COMBUSTION							
Residential Fuel - Area Source							
Bituminous Coal	16	87	114	27	11	4570	tons
Distillate Oil	7	40	3	2	8	1376	M gal
Natural Gas	68	2	72	29	269	7186	MMCF
Wood	54	0	157	13	6	6296	tons
Other - LP Gas	121	1	127	50	398	39780	M gal
Total	266	130	473	121	692		
Comm., Instl. & Ind.							
Bituminous Coal - Area	4371	3853	396	145	1480	202756	tons
Bituminous Coal - Point	13501	7166	168	51	3345	322781	tons
Distillate Oil - Area	77	1009	0	10	200	6690	M gal
Distillate Oil - Point	4	6	0	1	15	507	M gal
Residual Oil - Area	77	675	1	15	307	10237	M gal
Residual Oil - Point	79	1189	0	11	218	8654	M gal
Natural Gas - Area	103	4	93	71	495	10962	MMCF
Natural Gas - Point	71	2	1	192	844	9630	MMCF
Process Gas - Point	52	3190	0	0	0		MMCF
Wood - Area							
Wood - Point	0	27	18	18	91	106200	tons
Other - Point (Asphalt)	29	69	0	0	10	100000	tons
Total	18364	17190	677	514	7005		
Steam Electric Power Plant							
Anthracite Coal							
Bituminous Coal	566	3829	67	20	1209	134366	tons
Distillate Oil	0	1	0	0	1	22	Mgal
Residual Oil	0	0	0	0	0	0	Mgal
Natural Gas	0	0	0	1	4	51	MMCF
Other							
Total (Point Source)	566	3830	67	21	1214		
TOTAL FUEL COMBUSTION	19196	21150	1217	656	8911		

EMISSIONS INVENTORY SUMMARY (continued)

SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
PROCESS LOSSES (Total)	104109	5801	90052	5354	2196		
Area Sources	0	0	0	2858	0	2858	tons
Point Sources	104109	5801	90052	2496	2196		
SOLID WASTE DISPOSAL							
Incineration							
On-Site - Area Source							
On-Site - Point Source	288	2	3544	201	39	63514	tons
Municipal, etc. - Point Source							tons
Open Burning							
On-Site - Area Source	2226	139	11827	4174	835	278290	tons
On-Site - Point Source	212	4	749	61	36	26538	tons
Dumps - Area Source							
Dumps - Point Source							
Other - Area Source							
Other - Point Source							
TOTAL SOLID WASTE DISPOSAL	2726	145	16120	4436	910		
TRANSPORTATION - Area Source							
Motor Vehicles - Gasoline	708	429	193788	33427	22585	2145570	M ve mi
Motor Vehicles - Diesel	183	329	2378	476	2487	1432	M gal
Aircraft - Point Source	0	0	0	0	0	0	
Railroad	115	300	323	231	346	9221	M gal
Vessels	16	90	41	31	46	1250	M gal
Other							
TOTAL TRANSPORTATION	1022	1148	196530	34165	25464		
MISCELLANEOUS - Area Source							
Agricultural Burning							
Other - Wild Fires & Prescribed Burn.	2768	0	8140	651	326	325600	tons
TOTAL MISCELLANEOUS	2768	0	8140	651	326		
GRAND TOTAL							
Area Source	10910	6958	217460	42210	29799		
Point Source	118911	21286	94599	3052	8008		
Total	129821	28244	312059	45262	37807		

EMISSIONS INVENTORY SUMMARY FOR THE STATE OF ALABAMA
METROPOLITON BIRMINGHAM AIR QUALITY CONTROL REGION
DATA REPRESENTATIVE OF CALENDAR YEAR 1970

SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
FUEL COMBUSTION							
Residential Fuel - Area Source							
Bituminous Coal	165	929	1222	294	122	48851	tons
Distillate Oil	33	185	15	10	38	6392	M gal
Natural Gas	338	10	355	141	1330	35453	MMCF
Wood	77	0	229	17	10	9146	tons
Other - LP Gas	238	1	250	98	783	78196	M gal
Total	851	1125	2071	560	2283		
Comm., Instl. & Ind.							
Bituminous Coal - Area	13256	12162	2209	680	4474	640066	tons
Bituminous Coal - Point	17166	4588	178	63	1749	209580	tons
Distillate Oil - Area	217	8343	1222	394	2883	18918	M gal
Distillate Oil - Point	33	146	0	7	134	4464	M gal
Residual Oil - Area	278	2424	4	56	1120	37335	M gal
Residual Oil - Point	43	144	0	4	88	2948	M gal
Natural Gas - Area	275	9	243	196	1347	29244	MMCF
Natural Gas - Point	189	7	24	384	1724	20881	MMCF
Process Gas - Point	1583	9898	0	0	4988	168	MMMCF
Wood - Area							
Wood - Point	2302	370	444	452	2218	577000	tons
Other - Point	0	0	0	0	0		
Total	35342	38091	4324	2236	20725		
Steam Electric Power Plant							
Anthracite Coal							tons
Bituminous Coal	77728	160586	2321	696	41772	4641409	tons
Distillate Oil	0	3	0	1	12	388	M gal
Residual Oil	0	0	0	0	0	0	M gal
Natural Gas	9	0	0	24	4376	1199	MMCF
Other							
Total	77737	160589	2321	721	46160		
TOTAL FUEL COMBUSTION	113930	199805	8716	3517	69168		

EMISSIONS INVENTORY SUMMARY (continued)

SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
PROCESS LOSSES (Total)	150840	57785	208838	40630	421		
Area Sources	0	0	0	11316	0	11316	tons
Point Sources	150840	57785	208838	29314	421		
SOLID WASTE DISPOSAL							
Incineration							
On-Site - Area Source							
On-Site - Point Source	737	18	6707	595	120	134336	tons
Municipal, etc. - Point Source							
Open Burning							
On-Site - Area Source	7309	458	38827	13704	2742	913600	tons
On-Site - Point Source	734	4	1121	130	80	48974	tons
Dumps - Area Source							
Dumps - Point Source							tons
Other - Area Source							
Other - Point Source							tons
TOTAL SOLID WASTE DISPOSAL	8780	480	46655	14429	2942		tons
TRANSPORTATION - Area Source							
Motor Vehicles - Gasoline	2840	1697	927723	146486	87167	8487037	M ve mi
Motor Vehicles - Diesel	928	1670	12064	2414	12622	74244	M gal
Aircraft	0	0	0	0	0		
Railroad	483	1258	1355	967	1450	38684	M gal
Vessels	25	144	65	50	73	2000	M gal
Other							
TOTAL TRANSPORTATION	4276	4769	941207	149917	101312		
MISCELLANEOUS - Area Source							
Agricultural Burning							
Other - Wild Fires & Prescribed Burn.	3033	0	8918	713	356	356700	tons
TOTAL MISCELLANEOUS	3033	0	8918	713	356	356700	
GRAND TOTAL							
Area Source	29495	29290	994701	177536	116517		
Point Source	251364	233549	219633	31670	57682		
Total	280859	262839	1214334	209206	174199		

EMISSIONS INVENTORY SUMMARY FOR THE STATE OF ALABAMA
GRID-BIRMINGHAM AIR QUALITY CONTROL REGION
DATA REPRESENTATIVE OF CALENDAR YEAR 1970

SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
FUEL COMBUSTION							
Residential Fuel - Area Source							
Bituminous Coal	76	427	562	135	56	22460	tons
Distillate Oil	13	73	6	4	15	2524	M gal
Natural Gas	141	4	148	59	555	14797	MMCF
Wood	6	0	19	1	1	745	tons
Other - LP Gas	66	0	69	27	217	21667	M gal
Total	302	504	804	226	844		
Comm., Instl. & Ind.							
Bituminous Coal - Area	5424	5016	988	298	1829	263999	tons
Bituminous Coal - Point	10050	3315	145	53	1146	142604	tons
Distillate Oil - Area	91	1197	1	12	238	7937	M gal
Distillate Oil - Point	33	144	0	7	130	4344	M gal
Residual Oil - Area	119	1032	2	24	479	15960	M gal
Residual Oil - Point	28	100	0	4	73	2448	M gal
Natural Gas - Area	117	4	104	82	567	12403	MMCF
Natural Gas - Point	170	6	24	343	1543	18817	MMCF
Process Gas - Point	1583	9898	0	0	4988	168	MMMCF
Wood - Area							
Wood - Point	450	45	30	38	150	15000	tons
Other - Point	0	0	0	0	0		
Total	18065	20757	1294	861	11143		
Steam Electric Power Plant							
Anthracite Coal							
Bituminous Coal							
Distillate Oil							
Residual Oil							
Natural Gas							
Other							
Total	0	0	0	0	0		
TOTAL FUEL COMBUSTION	18367	21261	2098	1087	11987		

EMISSIONS INVENTORY SUMMARY FOR THE STATE OF SOUTH CAROLINA
CHARLESTON COUNTY AIR QUALITY CONTROL REGION
DATA REPRESENTATIVE OF CALENDAR YEAR 1970

SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
FUEL COMBUSTION							
Residential Fuel - Area Source							
Bituminous Coal	4	16	21	9	2	835	Tons
Distillate Oil	54	31	27	16	64	10780	M Gal
Natural Gas	43	1	45	18	168	4488	MMCF
Wood	13	0	37	3	1	1490	Tons
Other - LP Gas	26	0	28	11	86	8613	M Gal
Total	140	48	158	57	321		
Comm., Instl. & Ind.							
Bituminous Coal - Area	786	534	608	149	191	33322	Tons
Bituminous Coal - Point	193	617	27	14	203	70080	
Distillate Oil - Area	61	793	0	9	174	5789	M Gal
Distillate Oil - Point	0	3	0	0	1	45	M Gal
Residual Oil - Area	182	1489	10	56	809	24168	M Gal
Residual Oil - Point	91	1830	1	12	238	7945	M Gal
Natural Gas - Area	27	0	16	31	170	3254	MMCF
Natural Gas - Point	265	9	6	588	2572	29398	MMCF
Process Gas - Point	0	0	0	0	0	0	
Wood - Area							
Wood - Point	0	0	0	0	0	0	
Other - Point (Anthracite Coal)	1	3	13	0	0	280	Tons
Total	1606	5278	681	859	4358		
Steam Electric Power Plant							
Anthracite Coal	0	0	0	0	0	0	
Bituminous Coal	0	0	0	0	0	0	
Distillate Oil	0	0	0	0	0	0	
Residual Oil	116	6360	1	73	1527	29093	M Gal
Natural Gas	23	1	1	62	606	3108	MMCF
Other							
Total	139	6361	2	135	2133		
TOTAL FUEL COMBUSTION	1885	11687	841	1051	6812		

EMISSIONS INVENTORY SUMMARY FOR THE STATE OF ALABAMA
MOBILE INTERSTATE AIR QUALITY CONTROL REGION
DATA REPRESENTATIVE OF CALENDAR YEAR 1970

SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
FUEL COMBUSTION							
Residential Fuel - Area Source							
Bituminous Coal	20	115	150	36	15	6013	tons
Distillate Oil	7	36	3	1	8	1271	M gal
Natural Gas	87	2	92	36	344	9128	MMCF
Wood	29	0	85	7	3	3395	tons
Other - LP Gas	81	0	86	33	267	26674	M gal
Total	224	153	416	113	637		
Comm., Instl. & Ind.							
Bituminous Coal - Area	2053	1953	443	129	691	101659	tons
Bituminous Coal - Point	423	12551	132	40	2378	264242	tons
Distillate Oil - Area	46	615	0	6	121	4019	M gal
Distillate Oil - Point	0	0	0	0	0	0	M gal
Residual Oil - Area	53	455	0	10	213	7110	M gal
Residual Oil - Point	15	292	0	3	51	1691	M gal
Natural Gas - Area	57	1	54	38	266	6070	MMCF
Natural Gas - Point	99	4	3	276	1210	13819	MMCF
Process Gas - Point	0	0	0	0	0	0	MMCF
Wood - Area							
Wood - Point	2788	338	338	338	1690	518885	tons
Other - Point	780	1310	1557	1359	6565		
Total	6314	17519	2527	2199	13185		
Steam Electric Power Plant							
Anthracite Coal	0	0	0	0	0	0	tons
Bituminous Coal	762	1885	25	7	446	49600	tons
Distillate Oil	0	0	0	0	0	0	M gal
Residual Oil	0	0	0	0	0	0	M gal
Natural Gas	11	3	2	188	1831	9389	MMCF
Other	0	0	0	0	0	0	
Total	772	1888	27	195	2277		
TOTAL FUEL COMBUSTION	7310	19560	2970	2507	16099		

EMISSIONS INVENTORY SUMMARY (continued)

SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
PROCESS LOSSES (Total)	58688	8278	369	14102	5		
Area Sources	0	0	0	3109	0	3109	tons
Point Sources	58688	8278	369	10993	5		
SOLID WASTE DISPOSAL							
Incineration							
On-Site - Area Source							
On-Site - Point Source	109	2	3118	265	25	47914	tons
Municipal, etc. - Point Source							tons
Open Burning							
On-Site - Area Source	2057	128	10327	3857	772	257110	tons
On-Site - Point Source	163	352	544	83	28	38800	tons
Dumps - Area Source							
Dumps - Point Source							tons
Other - Area Source							
Other - Point Source							tons
TOTAL SOLID WASTE DISPOSAL	2329	482	13989	4205	825		tons
TRANSPORTATION - Area Source							
Motor Vehicles - Gasoline	715	434	198536	34722	22310		M ve mi
Motor Vehicles - Diesel	258	465	3359	672	3514	20673	M gal
Aircraft (Point Source)	109	141	1615	759	100		
Railroad	117	306	328	235	352	9391	M gal
Vessels	135	1764	165	111	644		M gal
Other							
TOTAL TRANSPORTATION	1334	3110	204003	36499	26920		
MISCELLANEOUS - Area Source							
Agricultural Burning							
Other - Wild Fires & Prescribed Burn.	1593	0	4683	375	187	187300	tons
TOTAL MISCELLANEOUS	1593	0	4683	375	187		
GRAND TOTAL							
Area Source	7308	6274	218311	43377	29707		
Point Source	63946	25156	7703	14311	14329		
Total	71254	31430	226014	57688	44036		

EMISSIONS INVENTORY SUMMARY FOR THE STATE OF ALABAMA
MOBILE COUNTY AIR QUALITY CONTROL REGION
DATA REPRESENTATIVE OF CALENDAR YEAR 1970

SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
FUEL COMBUSTION							
Residential Fuel - Area Source							
Bituminous Coal	20	114	150	36	15	6002	Tons
Distillate Oil	5	28	2	1	6	962	M Gal
Natural Gas	73	2	78	31	289	7708	MMCF
Wood	12	0	37	3	2	1450	Tons
Other - LP Gas	60	0	63	24	197	19681	M Gal
Total	170	144	330	95	499		
Comm., Instl. & Ind.							
Bituminous Coal - Area	1792	1684	381	111	603	88597	Tons
Bituminous Coal - Point	423	12551	132	40	2378	264242	Tons
Distillate Oil - Area	39	504	0	6	111	3675	M Gal
Distillate Oil - Point	0	0	0	0	0	0	
Residual Oil - Area	47	432	0	9	181	6018	M Gal
Residual Oil - Point	15	292	0	3	51	1691	M Gal
Natural Gas - Area	51	1	48	33	236	5408	MMCF
Natural Gas - Point	91	4	3	260	1139	13013	MMCF
Process Gas - Point	0	0	0	0	0	0	
Wood - Area							
Wood - Point	1065	144	144	144	2790	32478	Tons
Other - Point	636	1138	1385	1160	3634		
Total	4159	16750	2093	1766	11123		
Steam Electric Power Plant							
Anthracite Coal							
Bituminous Coal	762	1885	25	7	446	49600	Tons
Distillate Oil							
Residual Oil							
Natural Gas	11	3	2	188	1831	9389	MMCF
Other							
Total	772	1888	27	195	2277		
TOTAL FUEL COMBUSTION	5101	18782	2450	2056	13899		

EMISSIONS INVENTORY SUMMARY (continued)

SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
PROCESS LOSSES (TOTAL)	58458	8272	224	10497	5		
Area Sources	0	0	0	2475	0	2475	Tons
Point Sources	58458	8272	224	8022	5		
SOLID WASTE DISPOSAL							
Incineration							
On-Site - Area Source							
On-Site - Point Source	91	2	2793	237	22	42917	Tons
Municipal, etc. - Point Source							
Open Burning							
On-Site - Area Source	1460	91	7756	2738	548	182500	Tons
On-Site - Point Source	38	352	177	54	12	29427	Tons
Dumps - Area Source							
Dumps - Point Source							
Other - Area Source							
Other - Point Source							
TOTAL SOLID WASTE DISPOSAL	1589	445	10726	3029	582		
TRANSPORTATION - Area Source							
Motor Vehicles - Gasoline	455	277	133605	23163	13753	1379011	M ve mi
Motor Vehicles - Diesel	189	341	2461	492	2575	15149	M Gal
Aircraft (Point Source)	109	141	1615	759	100		
Railroad	90	236	254	182	272	7260	M Gal
Vessels	138	1767	173	117	6530		
Other							
TOTAL TRANSPORTATION	981	2762	138108	24713	23230		
MISCELLANEOUS - Area Source							
Agricultural Burning							
Other - Wild Fires & Prescribed Burn	875	0	2572	206	103	102900	Tons
TOTAL MISCELLANEOUS	875	0	2572	206	103		
GRAND TOTAL							
Area Source	5306	5477	147580	29627	25411		
Point Source	61699	24784	6500	10874	12408		
Total	67005	30261	154080	40501	37819		

EMISSIONS INVENTORY SUMMARY FOR THE STATE OF ALABAMA
MOBILE GRID AIR QUALITY CONTROL REGION
DATA REPRESENTATIVE OF CALENDAR YEAR 1970

(Area Only)

SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
FUEL COMBUSTION							
Residential Fuel - Area Source							
Bituminous Coal	20	112	147	35	15	5880	tons
Distillate Oil	5	27	2	1	6	943	M gal
Natural Gas	72	2	76	30	283	7557	MMCF
Wood	8	0	24	2	1	943	tons
Other - LP Gas	59	0	62	24	193	19300	M gal
Total	144	141	311	92	498		
Comm., Instl. & Ind.							
Bituminous Coal - Area	1199	1174	354	98	402	61752	tons
Bituminous Coal - Point							tons
Distillate Oil - Area	33	451	0	5	88	2924	M gal
Distillate Oil - Point							M gal
Residual Oil - Area	40	340	0	8	162	5391	M gal
Residual Oil - Point							M gal
Natural Gas - Area	48	1	47	28	212	5081	MMCF
Natural Gas - Point							MMCF
Process Gas - Point							MMCF
Wood - Area							
Wood - Point							tons
Other - Point							
Total	1320	1966	401	139	864		
Steam Electric Power Plant							
Anthracite Coal							tons
Bituminous Coal							tons
Distillate Oil							M gal
Residual Oil							M gal
Natural Gas							MMCF
Other							
Total							
TOTAL FUEL COMBUSTION	1464	2107	712	231	1362		

EMISSIONS INVENTORY SUMMARY (continued)

SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
PROCESS LOSSES (Total)	0	0	0	2068	0		
Area Sources	0	0	0	2068	0	2068	tons
Point Sources							
SOLID WASTE DISPOSAL							
Incineration							
On-Site - Area Source							tons
On-Site - Point Source							tons
Municipal, etc. - Point Source							
Open Burning							
On-Site - Area Source	1431	89	7601	2683	537	178850	tons
On-Site - Point Source							tons
Dumps - Area Source							
Dumps - Point Source							tons
Other - Area Source							
Other - Point Source							tons
TOTAL SOLID WASTE DISPOSAL	1431	89	7601	2683	537	178850	tons
TRANSPORTATION - Area Source							
Motor Vehicles - Gasoline	441	268	130446	22577	13271	1336171	M ve mi
Motor Vehicles - Diesel	151	273	1969	394	2060	12119	M gal
Aircraft	109	141	1615	759	100		
Railroad	78	204	219	157	235	6264	M gal
Vessels	119	1674	124	80	598		M gal
Other							
TOTAL TRANSPORTATION	898	2560	134373	23967	16264		
MISCELLANEOUS - Area Source							
Agricultural Burning							
Other - Wild Fires & Prescribed Burn.	570	0	1675	134	67	67000	tons
TOTAL MISCELLANEOUS	570	0	1675	134	67	67000	tons
GRAND TOTAL							
Area Source	4363	4756	144361	29083	18230		
Point Source							
Total	4363	4756	144361	29083	18230		

EMISSIONS INVENTORY SUMMARY FOR THE STATE OF ALABAMA
SOUTHEAST ALABAMA INTRASTATE AIR QUALITY CONTROL REGION
DATA REPRESENTATIVE OF CALENDAR YEAR 1970

SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
FUEL COMBUSTION							
Residential Fuel - Area Source							
Bituminous Coal	1	6	8	2	1	301	tons
Distillate Oil	16	93	8	5	19	3214	M gal
Natural Gas	25	1	26	11	99	2644	MMCF
Wood	63	0	185	15	7	7390	tons
Other - LP Gas	78	0	82	32	257	25682	M gal
Total	183	100	309	65	383		
Comm., Instl. & Ind.							
Bituminous Coal - Area	1769	1590	225	74	598	83672	tons
Bituminous Coal - Point	0	0	0	0	0	0	tons
Distillate Oil - Area	62	834	0	9	161	5380	M gal
Distillate Oil - Point	0	0	0	0	0	0	M gal
Residual Oil - Area	33	292	0	7	134	4465	M gal
Residual Oil - Point	0	30	0	0	8	250	M gal
Natural Gas - Area	20	0	0	19	116	2189	MMCF
Natural Gas - Point	0	0	0	0	0	0	MMCF
Process Gas - Point	0	0	0	0	0	0	MMCF
Wood - Area							
Wood - Point	90	9	6	6	15	6000	tons
Other - Point							
Total	1974	2755	231	115	1032		
Steam Electric Power Plant							
Anthracite Coal							tons
Bituminous Coal	94	156	5	2	89	7124	tons
Distillate Oil							M gal
Residual Oil							M gal
Natural Gas	21	6	4	403	3926	20132	MMCF
Other							
Total	115	162	9	405	4014		
TOTAL FUEL COMBUSTION	2272	3017	549	585	5429		

EMISSIONS INVENTORY SUMMARY (continued)

SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
PROCESS LOSSES (Total)	13227	977	0	1993	0		
Area Sources	0	0	0	1665	0	1665	tons
Point Sources	13227	977	0	328	0		
SOLID WASTE DISPOSAL							
Incineration							
On-Site - Area Source							
On-Site - Point Source	665	3	6692	502	60	107459	tons
Municipal, etc. - Point Source	0	0	0	0	0	0	tons
Open Burning							
On-Site - Area Source	1359	85	7220	2548	510	169890	tons
On-Site - Point Source	792	0	2328	183	94	92073	tons
Dumps - Area Source							
Dumps - Point Source							tons
Other - Area Source							
Other - Point Source							tons
TOTAL SOLID WASTE DISPOSAL	2816	88	16240	3233	664	369422	tons
TRANSPORTATION - Area Source							
Motor Vehicles - Gasoline	393	238	113189	19196	12286	1190805	M ve mi
Motor Vehicles - Diesel	111	200	1447	289	1514	8905	M gal
Aircraft (Point Source)	58	120	1588	371	44		
Railroad	68	177	190	136	204	5433	M gal
Vessels	0	0	0	0	0	0	M gal
Other							
TOTAL TRANSPORTATION	630	735	116414	19992	14048		
MISCELLANEOUS - Area Source							
Agricultural Burning							
Other - Wild Fires & Prescribed Burn.	941	0	2768	221	111	110700	tons
TOTAL MISCELLANEOUS	941	0	2768	221	111		
GRAND TOTAL							
Area Source	4939	3516	125348	24229	16017		
Point Source	14947	1301	10623	1795	4235		
Total	19886	4817	135971	26024	20252		

EMISSIONS INVENTORY SUMMARY FOR THE STATE OF ALABAMA
TENN. RIVER VALLEY-CUMBERLAND MOUNTAINS INTERSTATE AIR QUALITY CONTROL REGION
DATA REPRESENTATIVE OF CALENDAR YEAR 1970

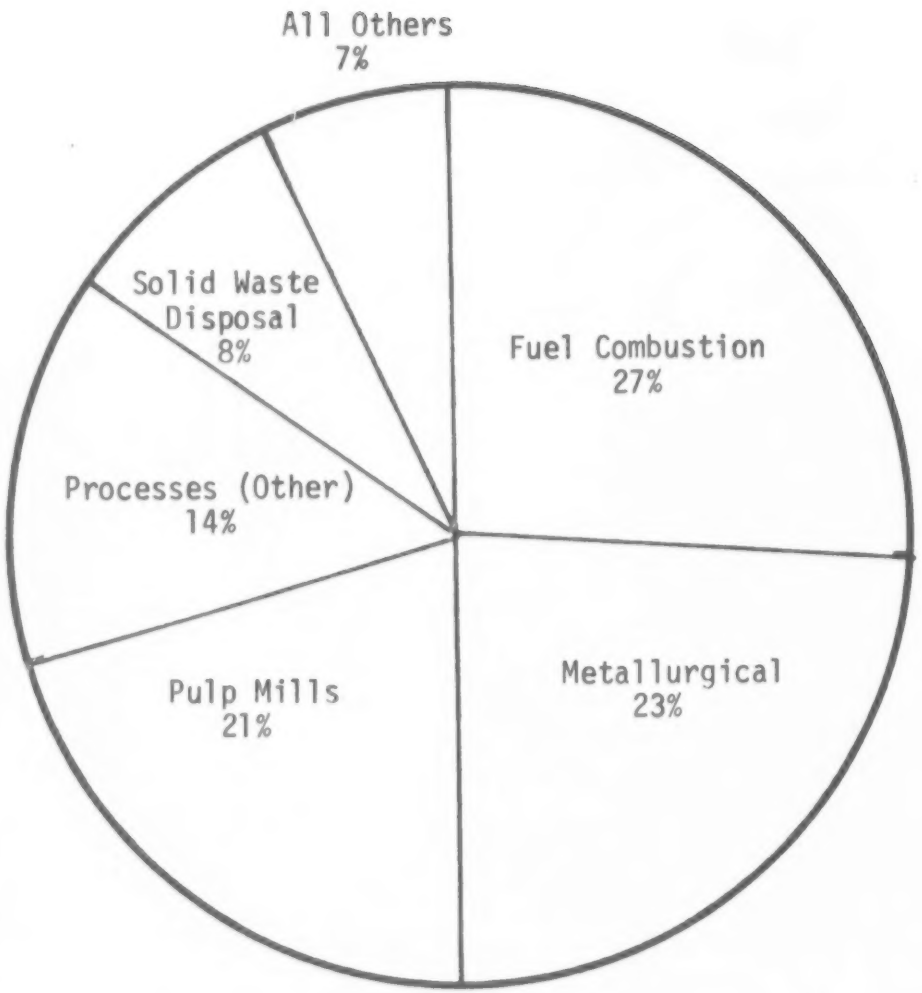
SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
FUEL COMBUSTION							
Residential Fuel - Area Source							
Bituminous Coal	42	233	306	73	31	12244	Tons
Distillate Oil	29	164	14	9	34	5702	M Gal
Natural Gas	54	2	57	23	213	5683	MMCF
Wood	48	0	142	11	6	5686	Tons
Other - LP Gas	101	0	106	41	330	33029	M Gal
Total	274	399	625	157	614		
Comm., Instl. & Ind.							
Bituminous Coal - Area	5030	4517	633	210	1700	237743	Tons
Bituminous Coal - Point	3518	12609	226	113	1730	229409	Tons
Distillate Oil - Area	102	1342	0	13	264	8832	M Gal
Distillate Oil - Point	14	120	0	3	57	2022	M Gal
Residual Oil - Area	86	757	2	17	344	11467	M Gal
Residual Oil - Point	50	535	0	6	132	4398	M Gal
Natural Gas - Area	76	3	63	63	403	8179	MMCF
Natural Gas - Point	601	20	14	1335	5842	66801	MMCF
Process Gas - Point	0	0	0	0	0	0	MMCF
Wood - Area							
Wood - Point	392	5	26	26	131	26180	Tons
Other - Point (Propane)	3	0	0	1	2	98	M Gal
Total	9872	19908	964	1787	10605		
Steam Electric Power Plant							
Anthracite Coal							
Bituminous Coal	276850	405627	3190	957	57420	6380000	Tons
Distillate Oil	0	0	0	0	0	0	M Gal
Residual Oil	0	0	0	0	0	0	M Gal
Natural Gas	0	0	0	0	0	0	MMCF
Other							
Total	276850	405627	3190	957	57420		
TOTAL FUEL COMBUSTION	286996	425934	4779	2901	68639		

EMISSIONS INVENTORY SUMMARY (continued)

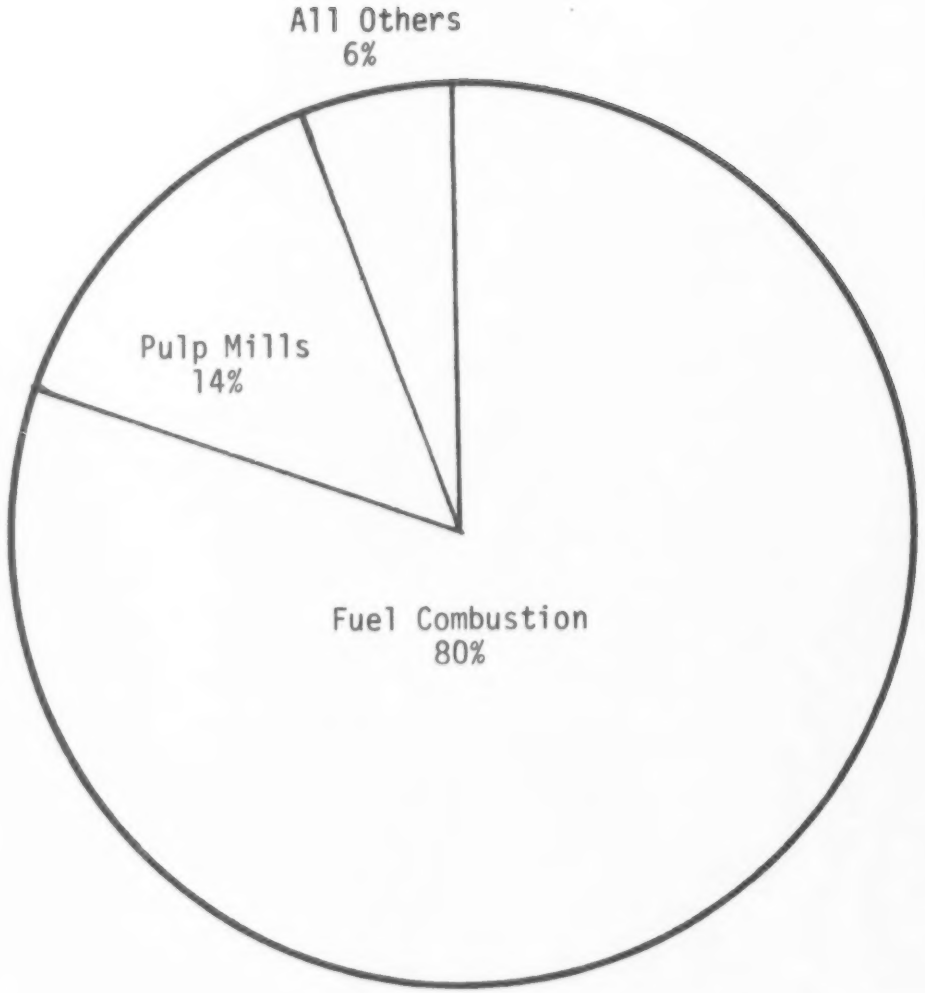
SOURCE CATEGORY	TONS OF POLLUTANTS/YEAR					FUEL ETC.	
	Part.	SO_2	CO	HC	NO_x	Quantity	Units
PROCESS LOSSES (TOTAL)	73600	5057	1019	12000	1159		
Area Sources	0	0	0	5400	0	5400	Tons
Point Sources	73600	5057	1019	6600	1159		
SOLID WASTE DISPOSAL							
Incineration							
On-Site - Area Source							
On-Site - Point Source	410	9	4049	408	53	74561	Tons
Municipal, etc. - Point Source							
Open Burning							
On-Site - Area Source	2919	182	15509	5474	1095	364920	Tons
On-Site - Point Source	231	4	830	171	39	23822	Tons
Dumps - Area Source							
Dumps - Point Source							
Other - Area Source							
Other - Point Source							
TOTAL SOLID WASTE DISPOSAL	3560	195	20388	6053	1187		Tons
TRANSPORTATION - Area Source							
Motor Vehicles - Gasoline	1130	685	307054	53083	36115	3422370	M ve mi
Motor Vehicles - Diesel	304	547	3951	790	4133	24311	M Gal
Aircraft (Point Source)	94	150	4951	1092	78		
Railroad	195	508	547	391	586	15638	M Gal
Vessels	27	155	70	54	78	2150	M Gal
Other							
TOTAL TRANSPORTATION	1750	2045	316573	55410	40990		
MISCELLANEOUS - Area Source							
Agricultural Burning							
Other - Wild Fires & Prescribed Burn.	1295	0	3810	305	152	152400	Tons
TOTAL MISCELLANEOUS	1295	0	3810	305	152		
GRAND TOTAL							
Area Source	11438	9095	332264	65957	45484		
Point Source	355763	424136	14305	10712	66643		
Total	367201	433231	346569	76669	112127		

5. SUMMARY CHARTS

Region 001

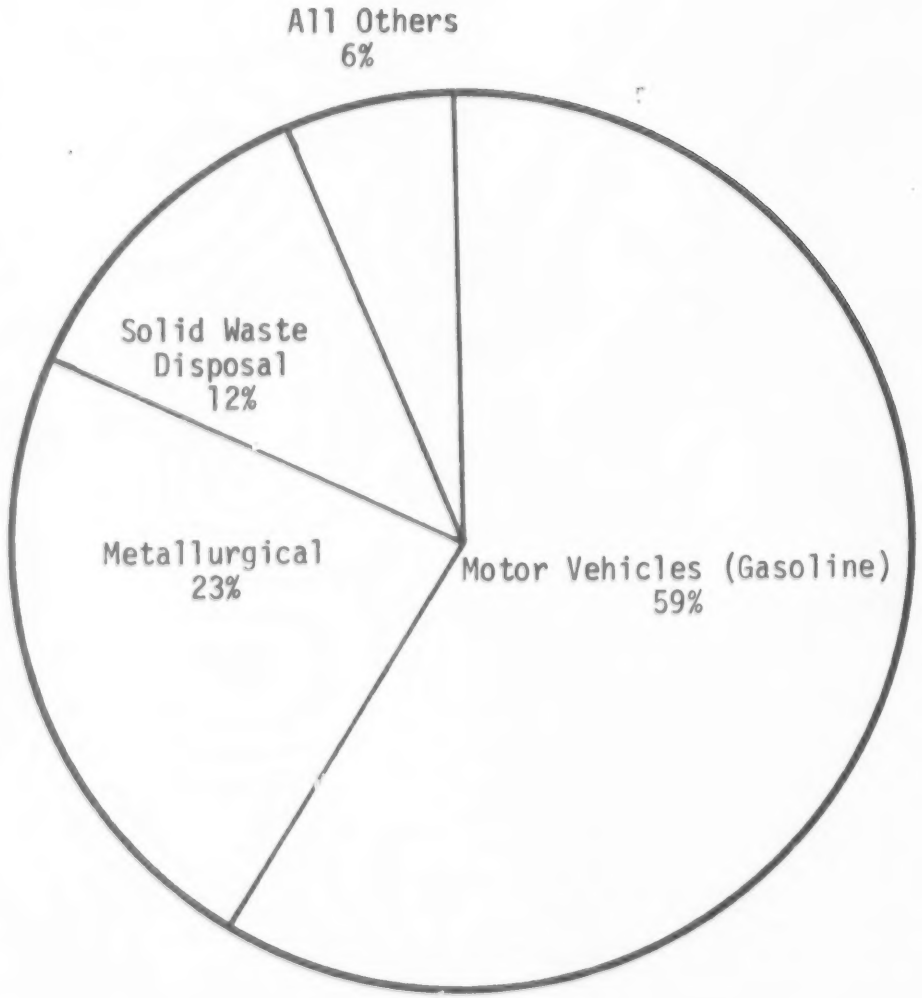


Particulate Emissions

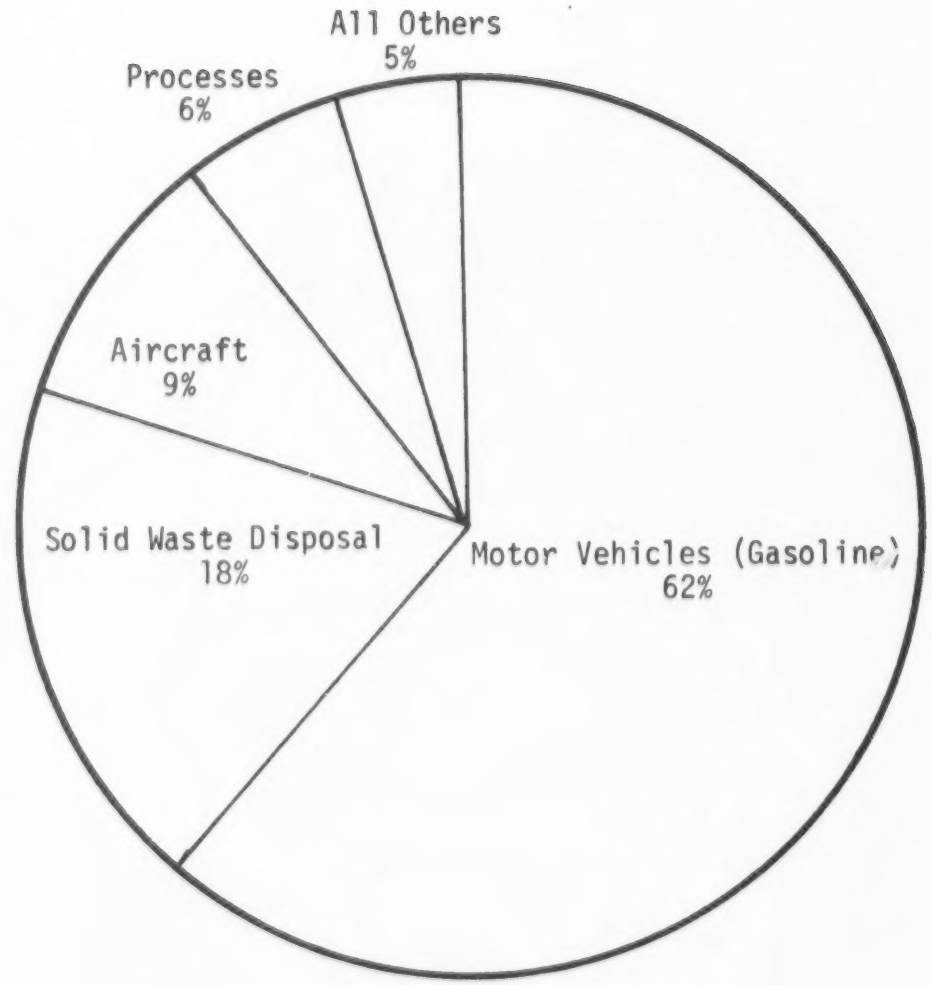


SO_2 Emissions

Region 001

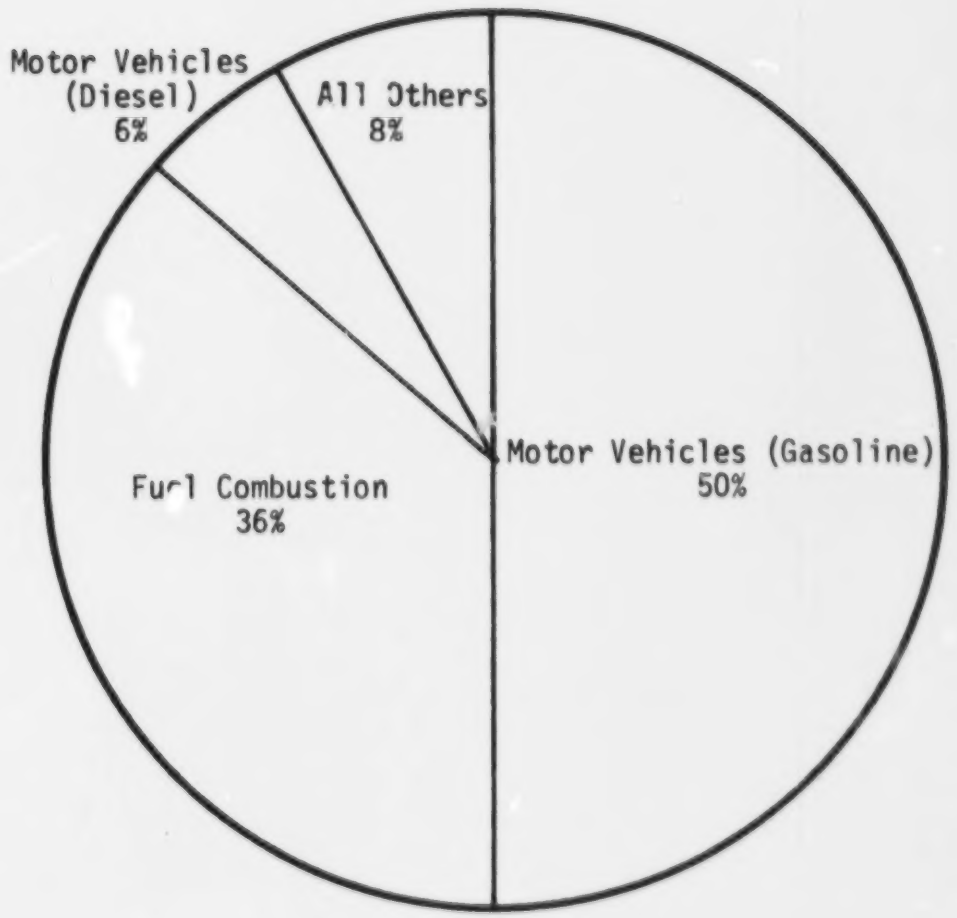


CO Emissions



HC Emissions

Region 001



NO_x Emissions

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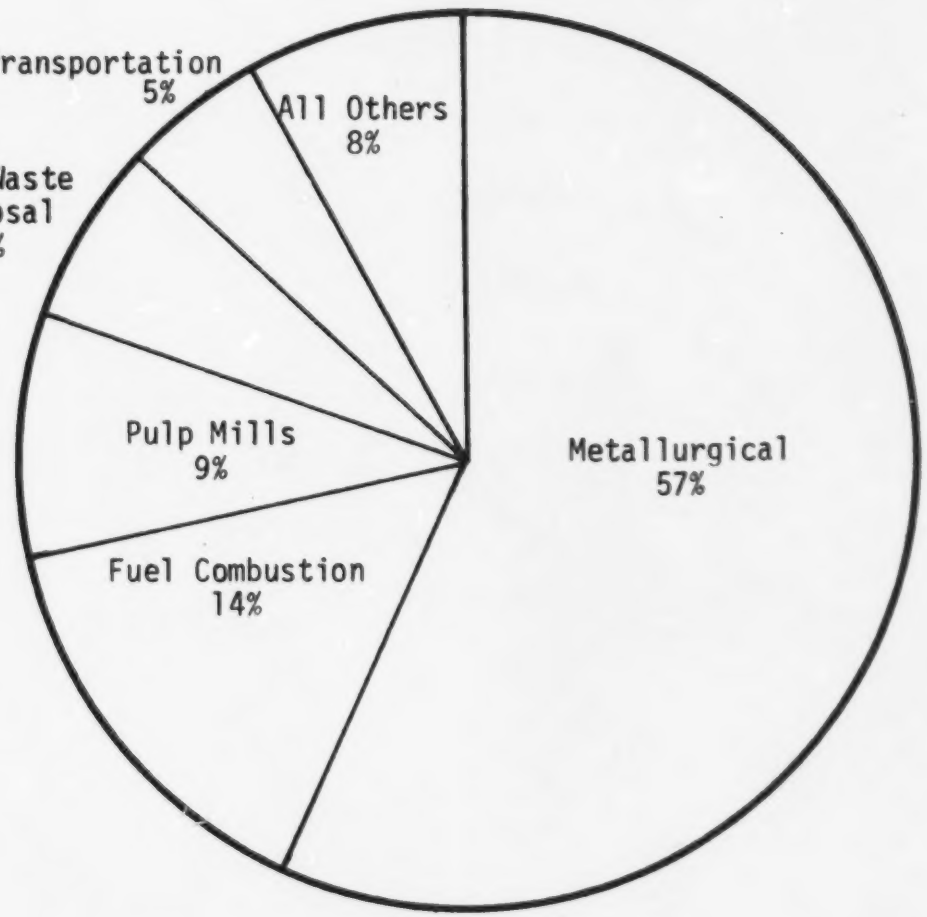

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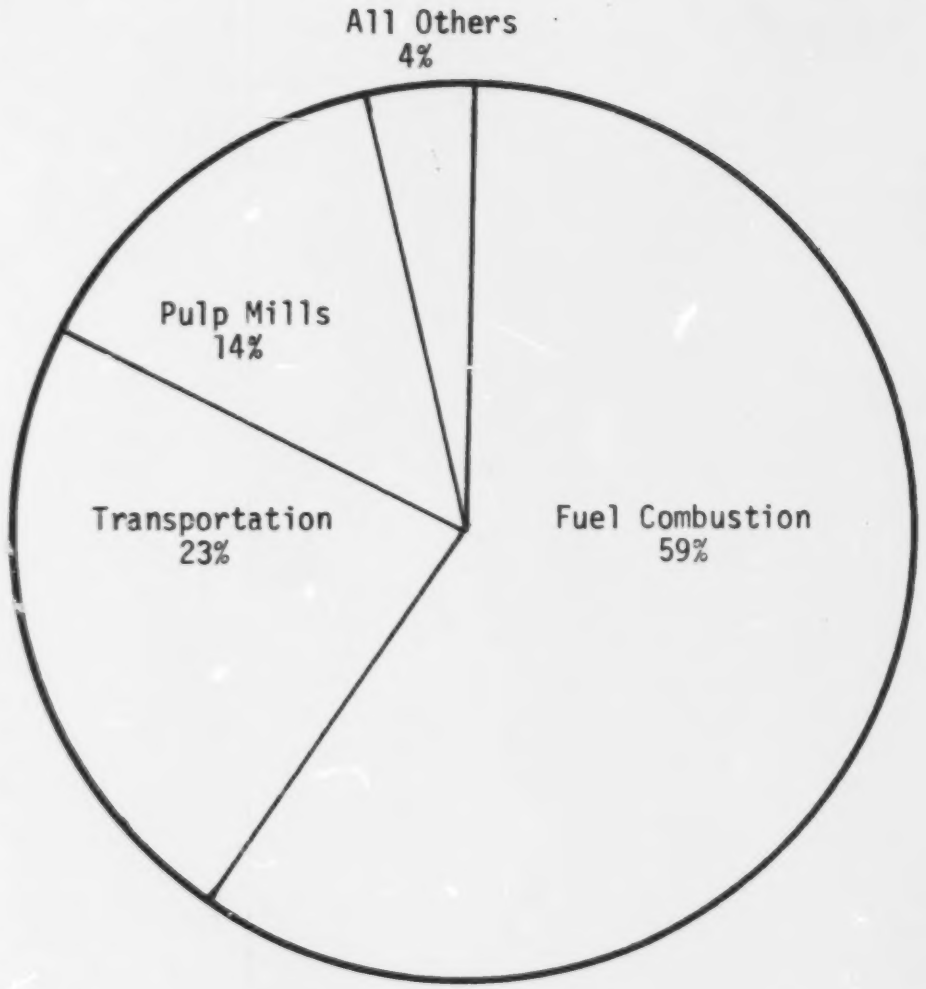
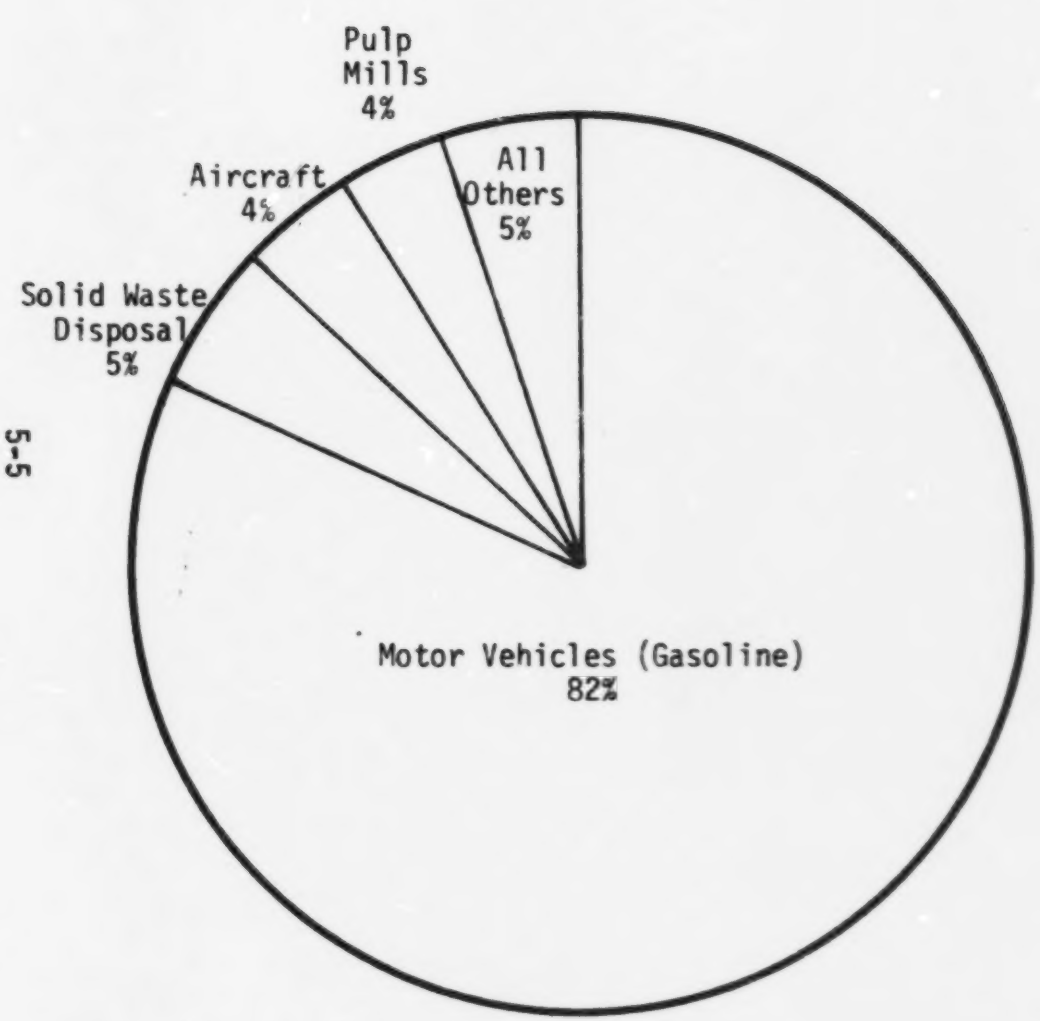
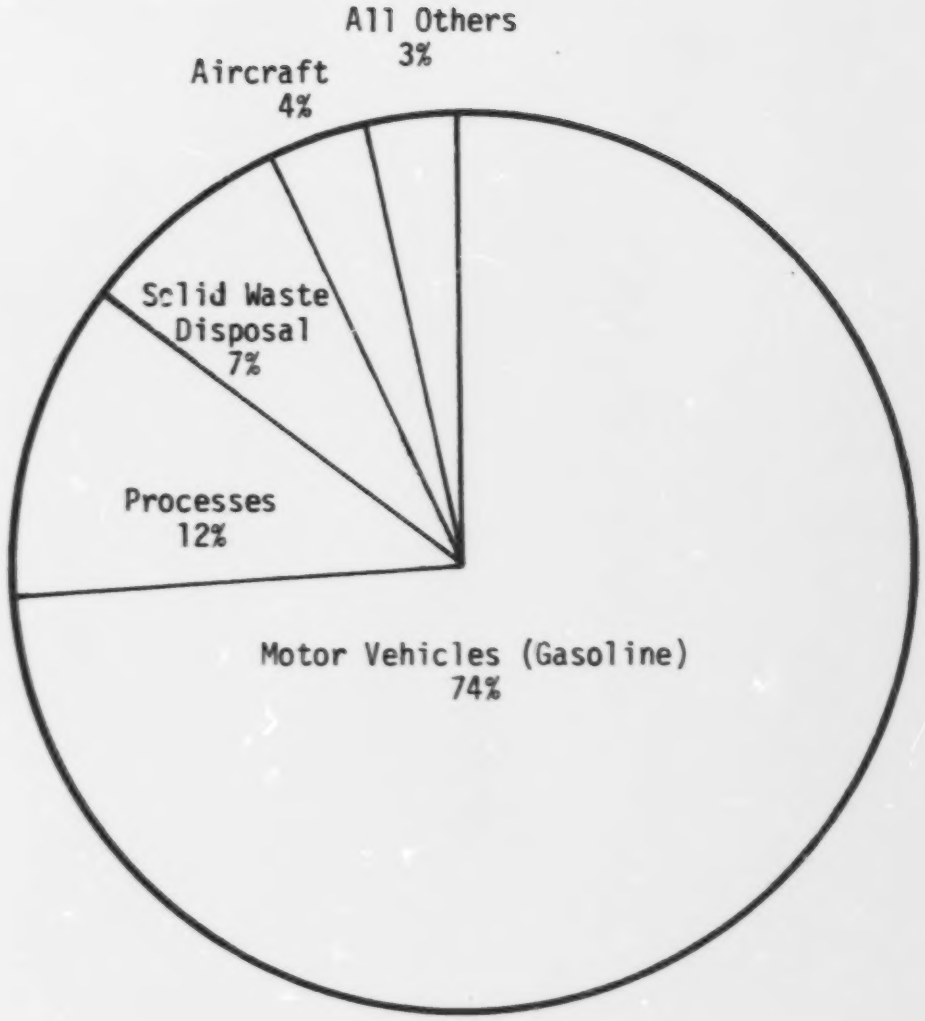


SO_2 Emissions

Region 002

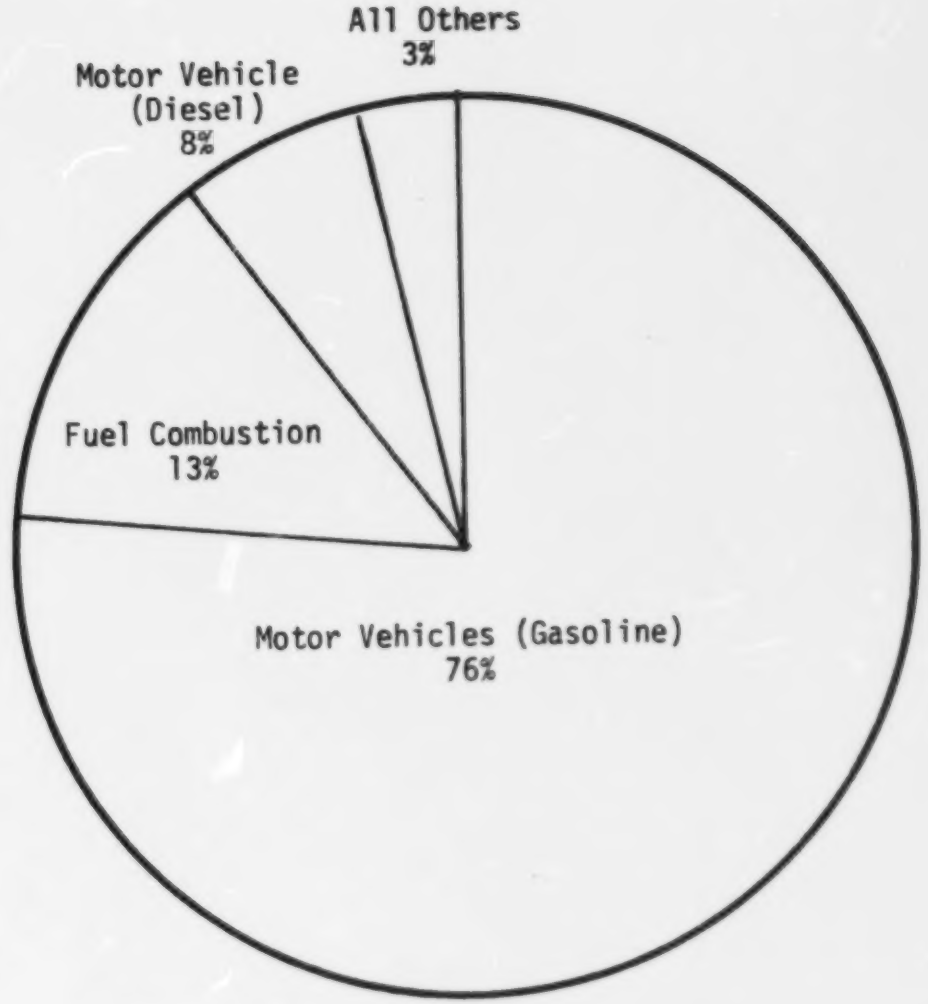


CO Emissions



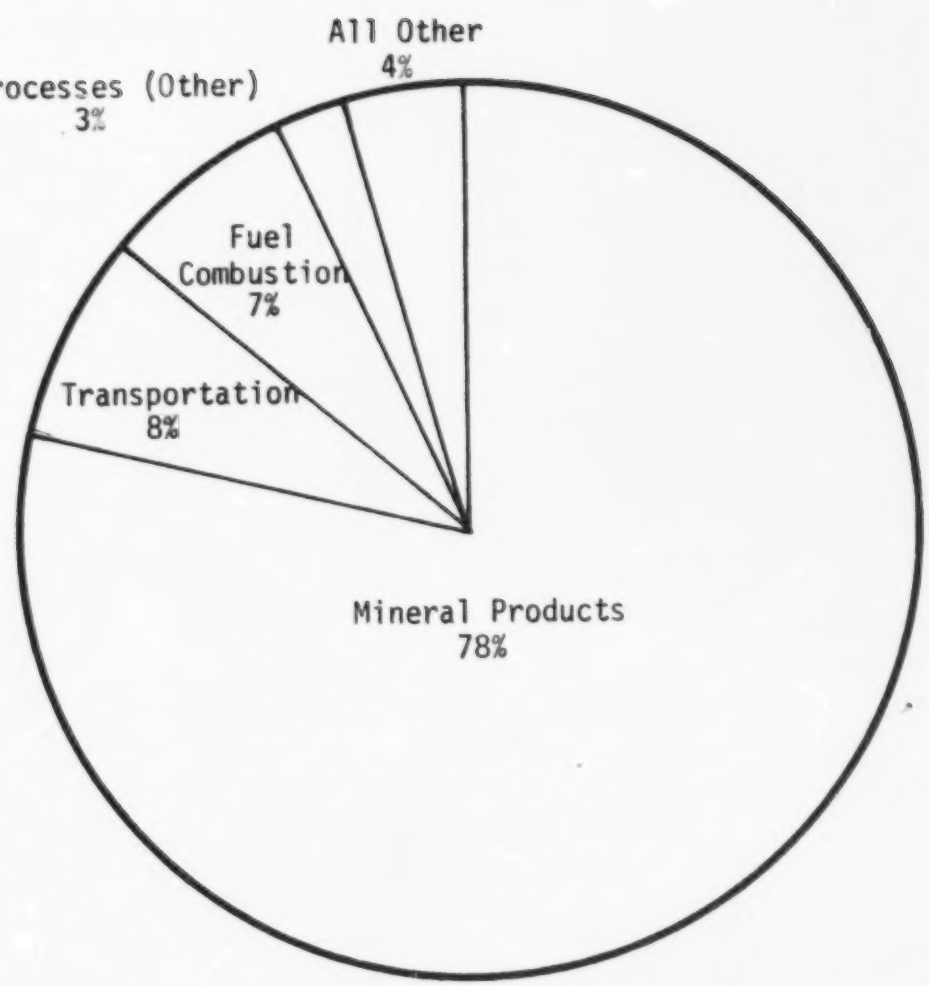
HC Emissions

Region 002

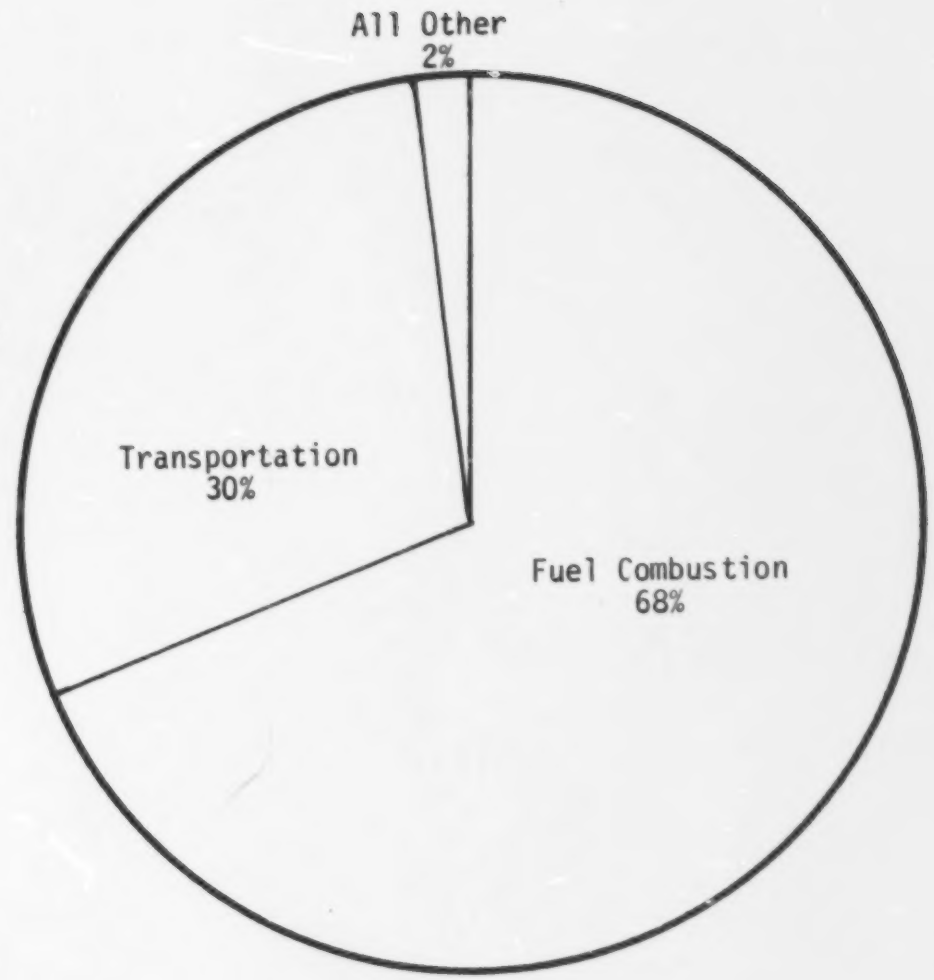


NO_x Emissions

Montgomery County

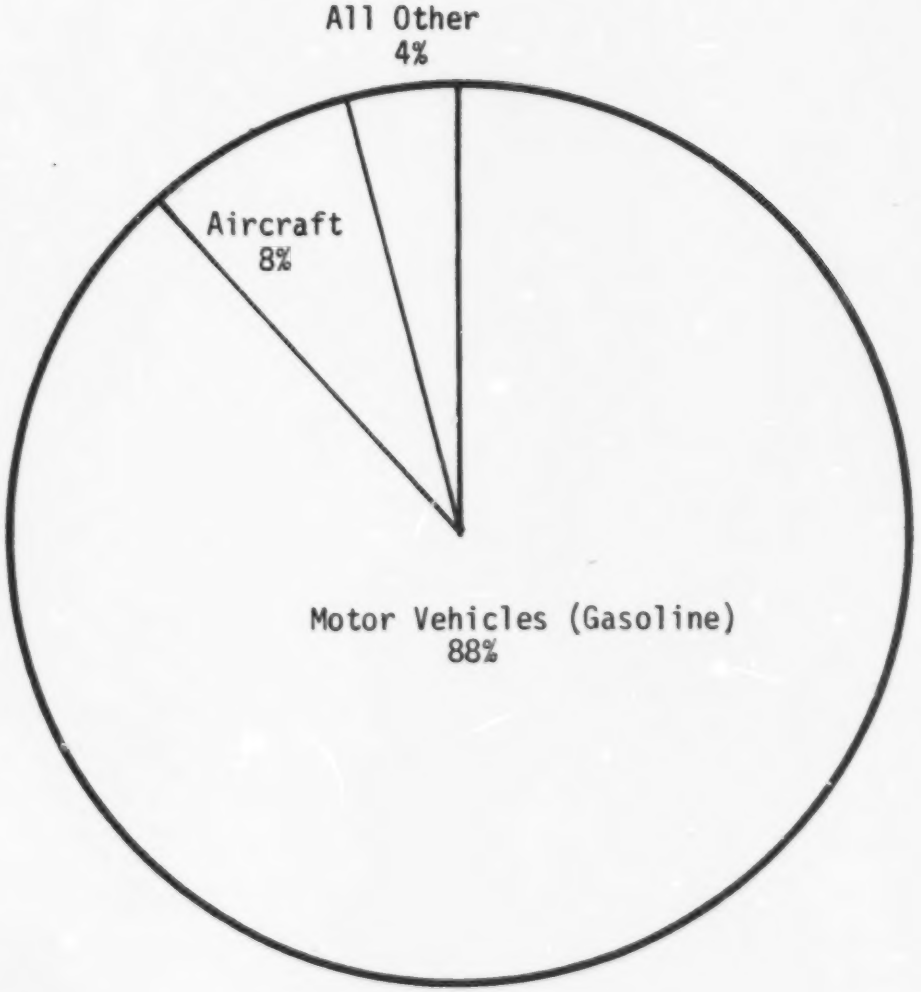


Particulate Emissions

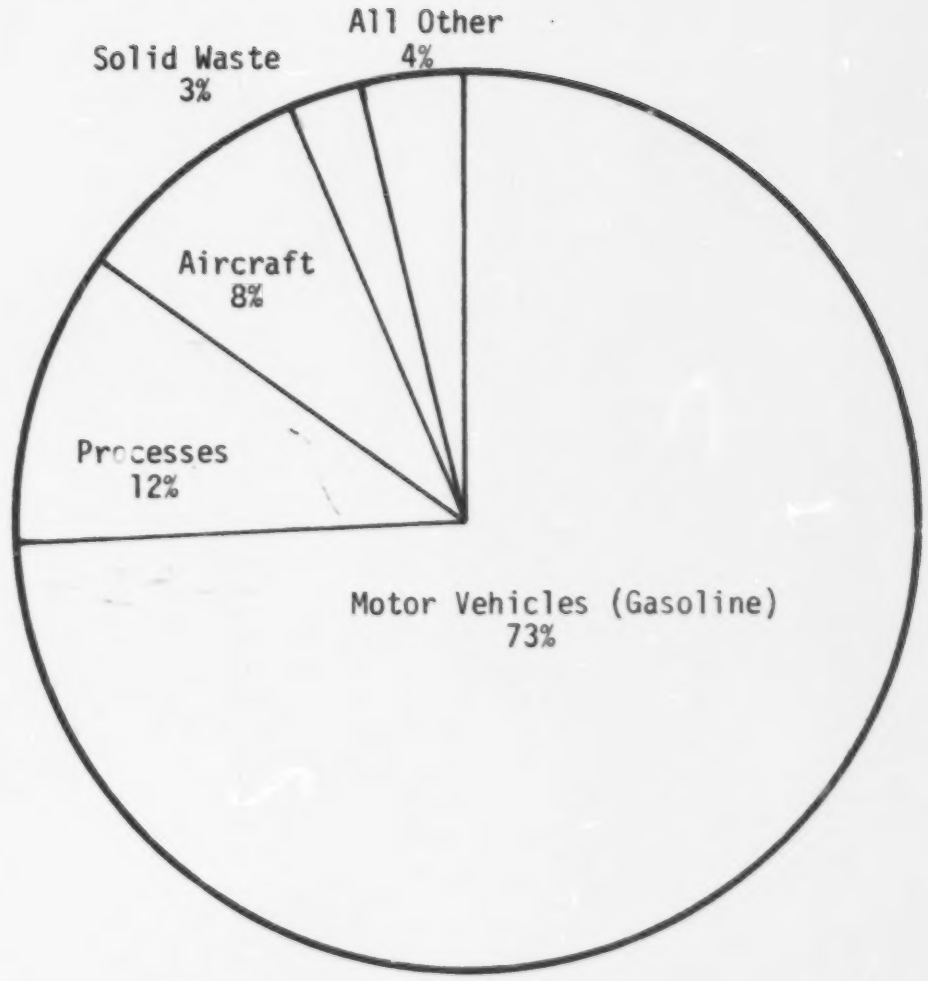


SO_2 Emissions

Montgomery County

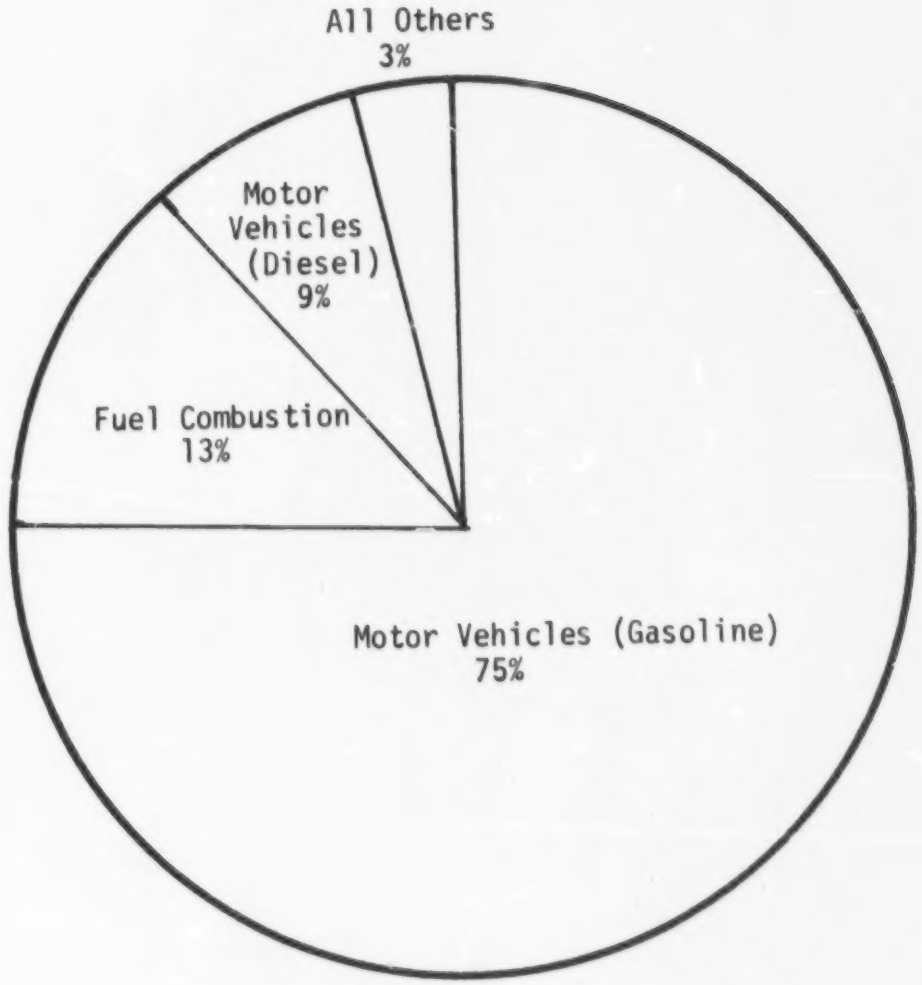


CO Emissions



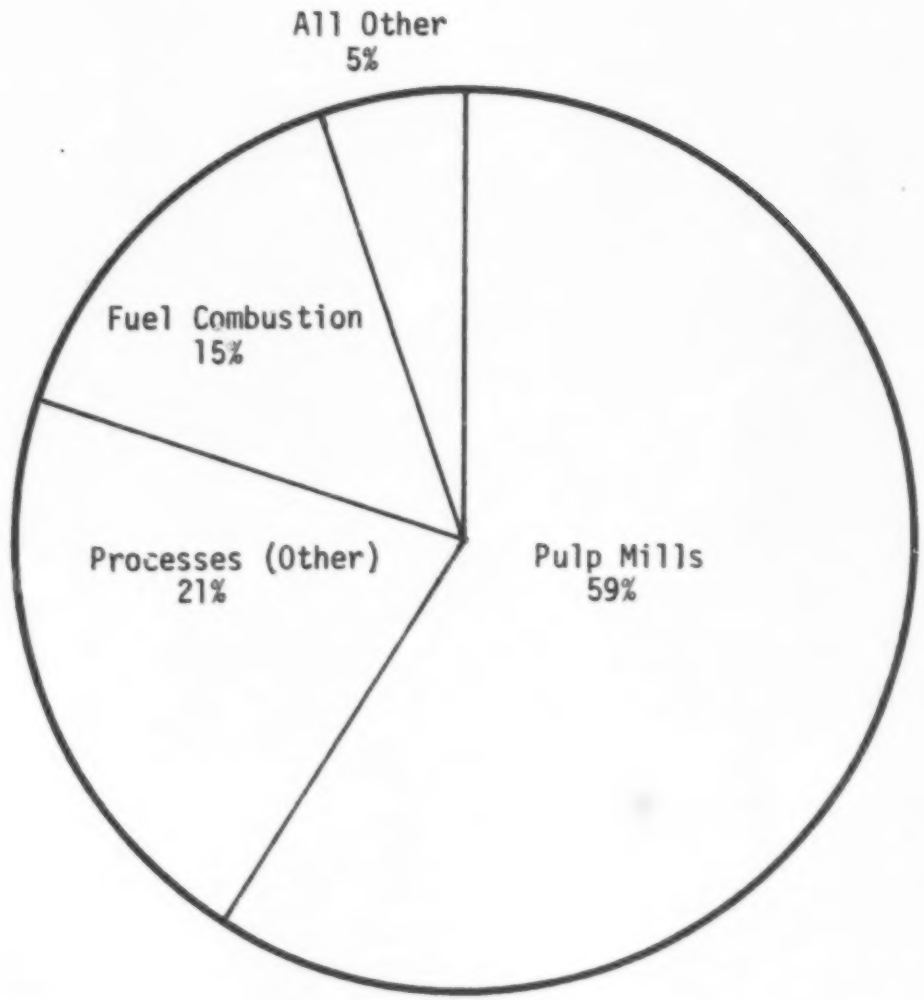
HC Emissions

Montgomery County

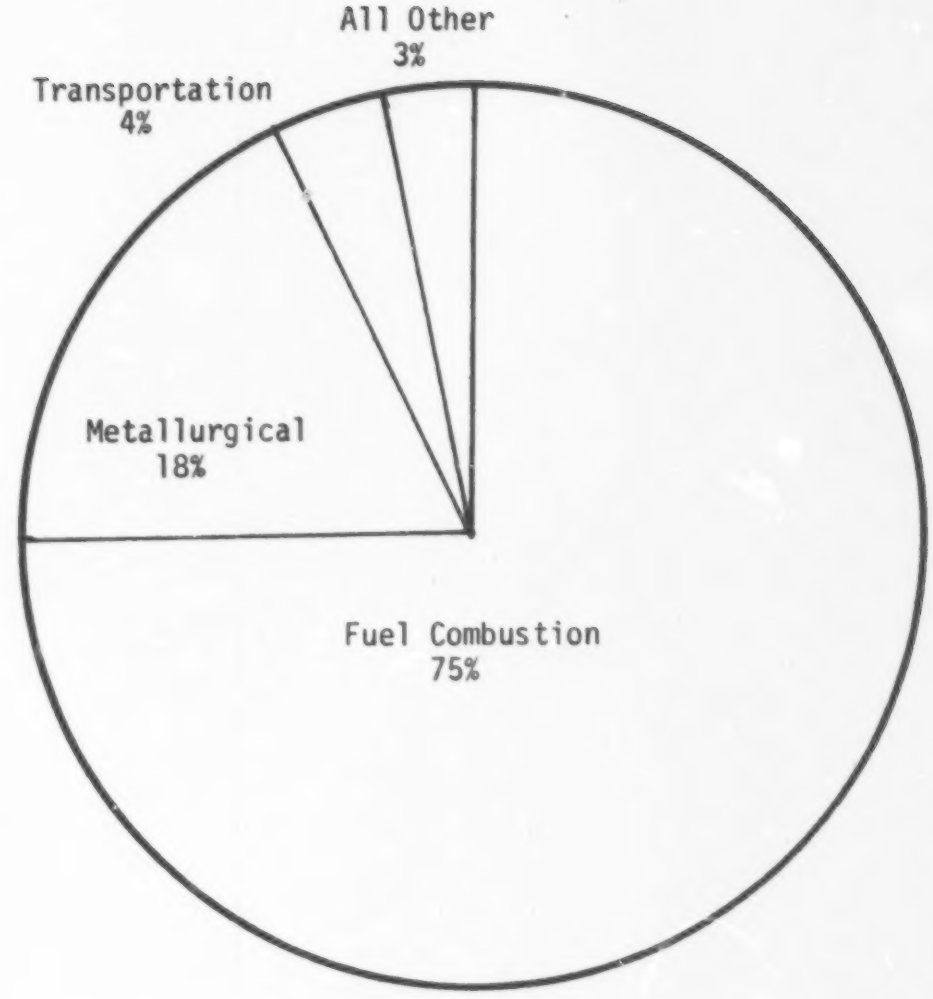


NO_x Emissions

Region 003

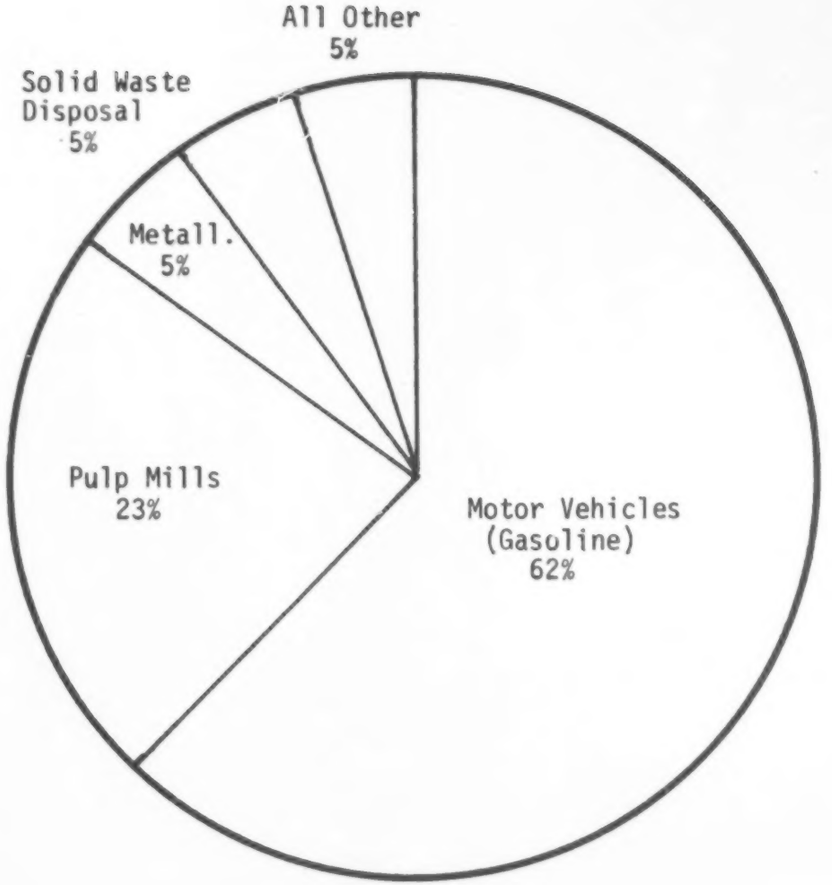


Particulate Emissions

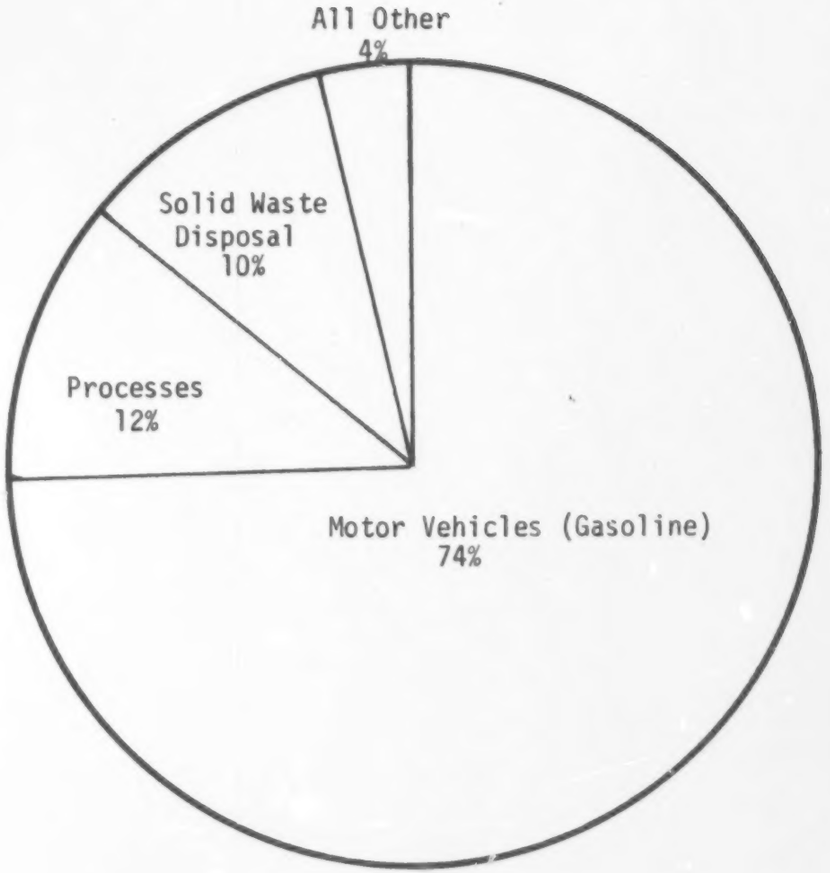


SO_2 Emissions

Region 003

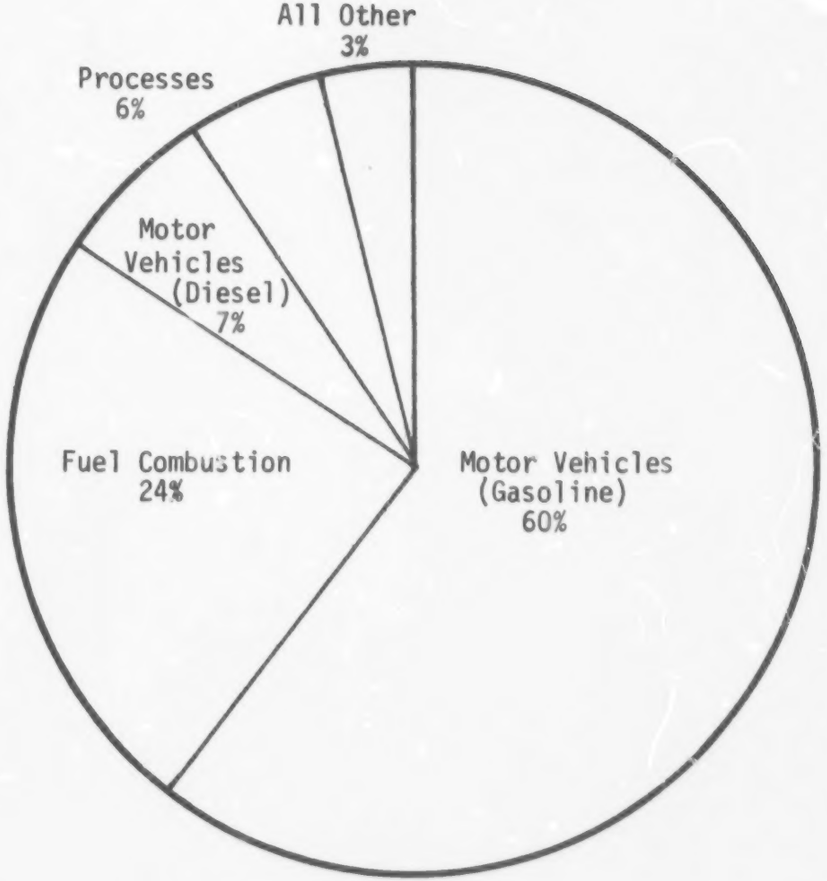


CO Emissions



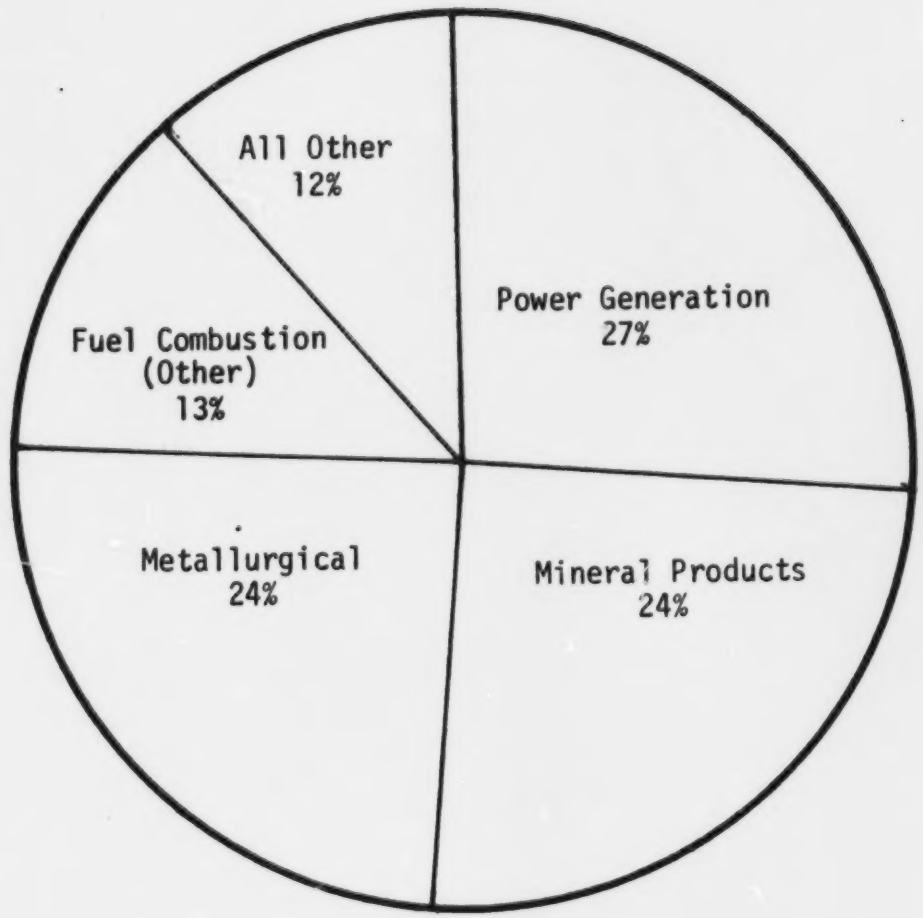
HC Emissions

Region 003

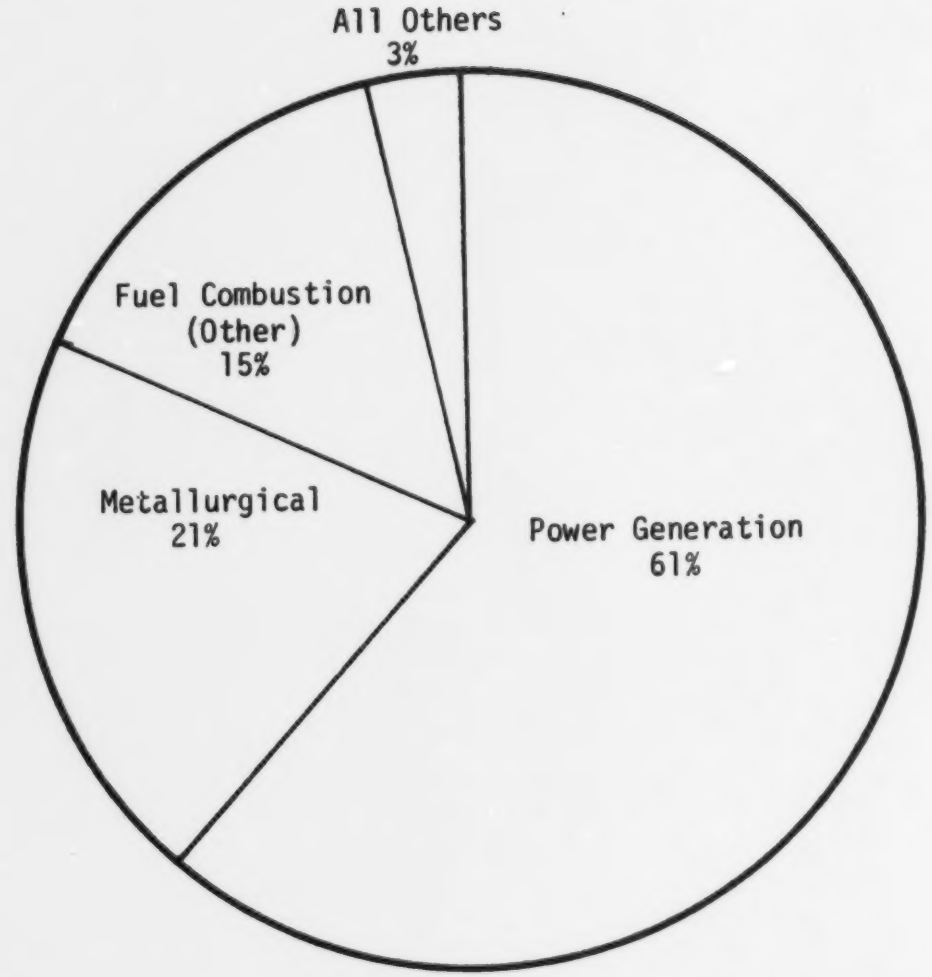


NO_x Emissions

Region 004



Particulate Emissions



SO_2 Emissions

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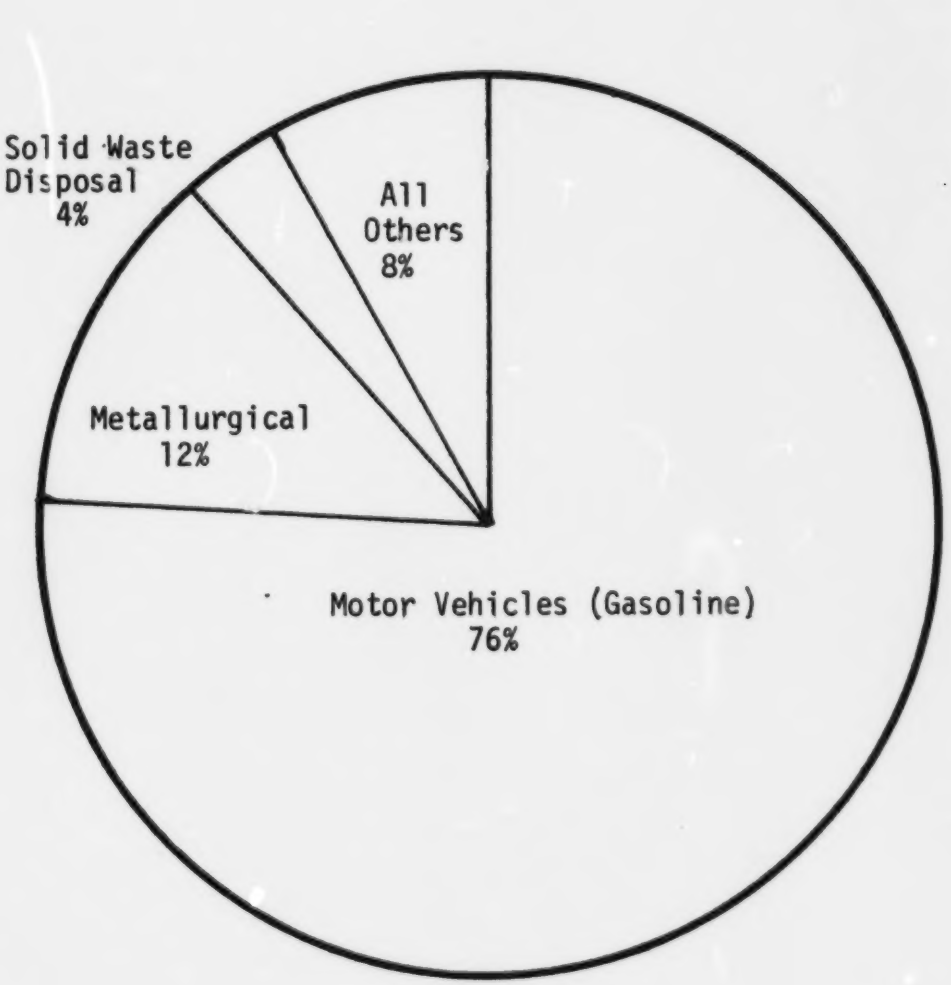
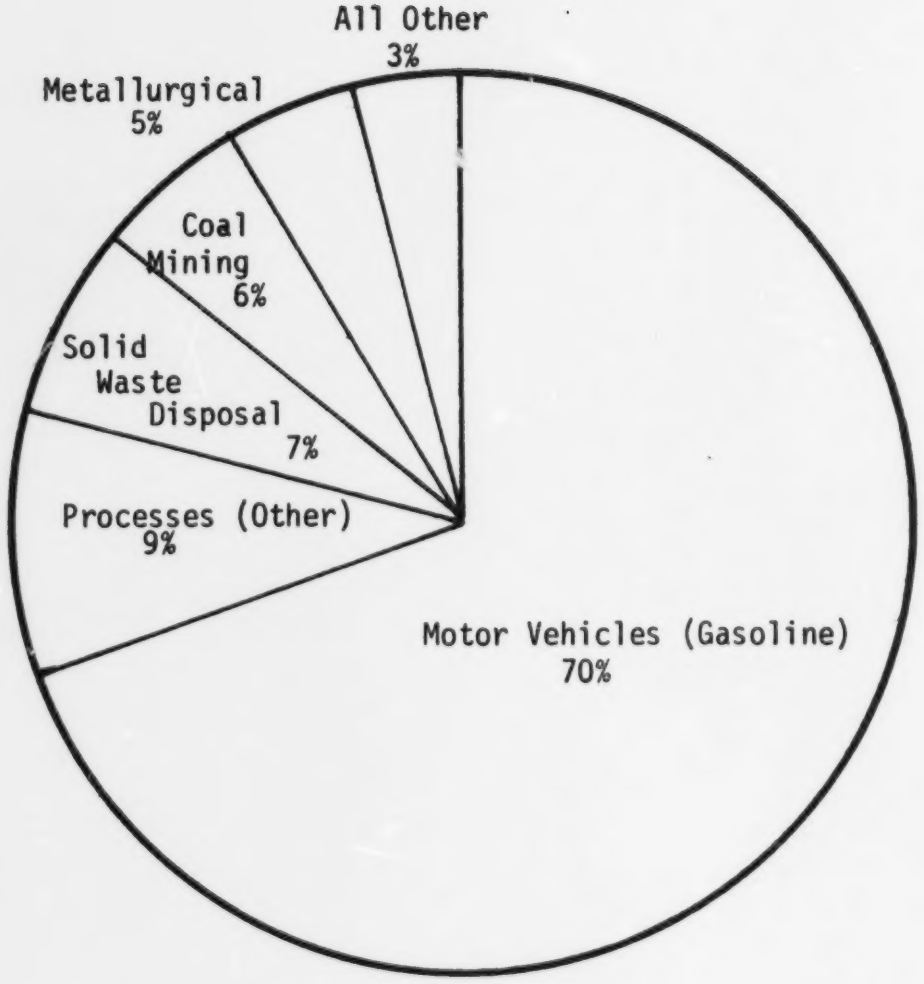
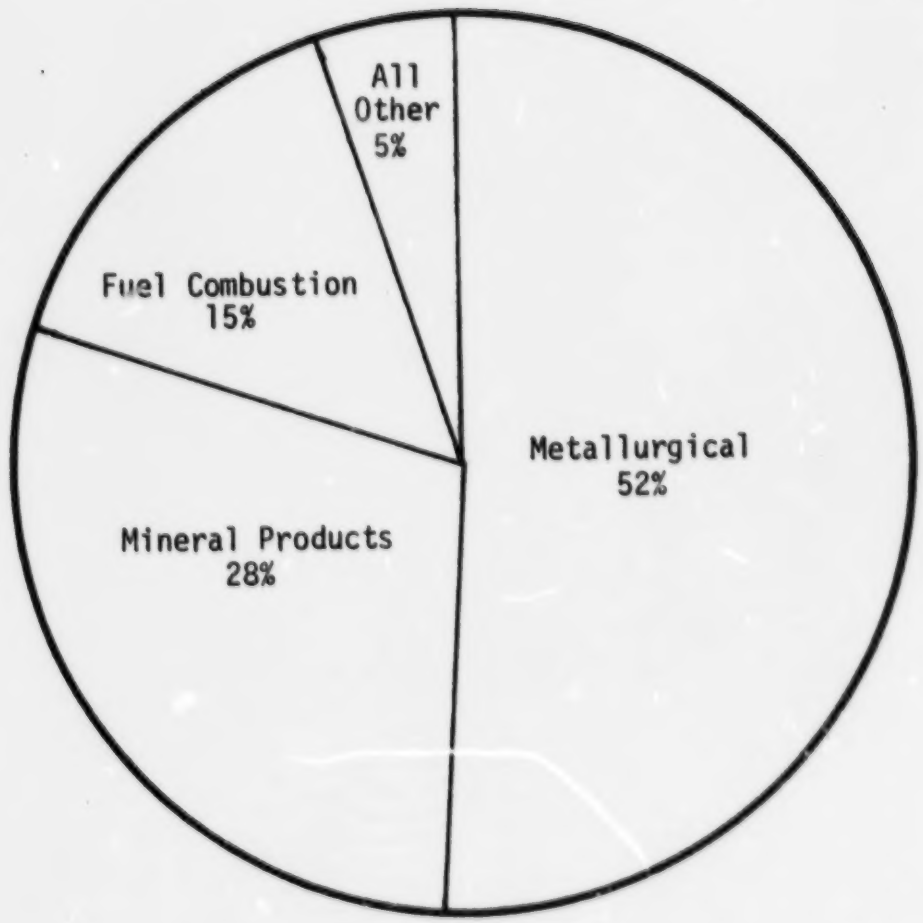


CO Emissions



HC Emissions

BIRMINGHAM GRID



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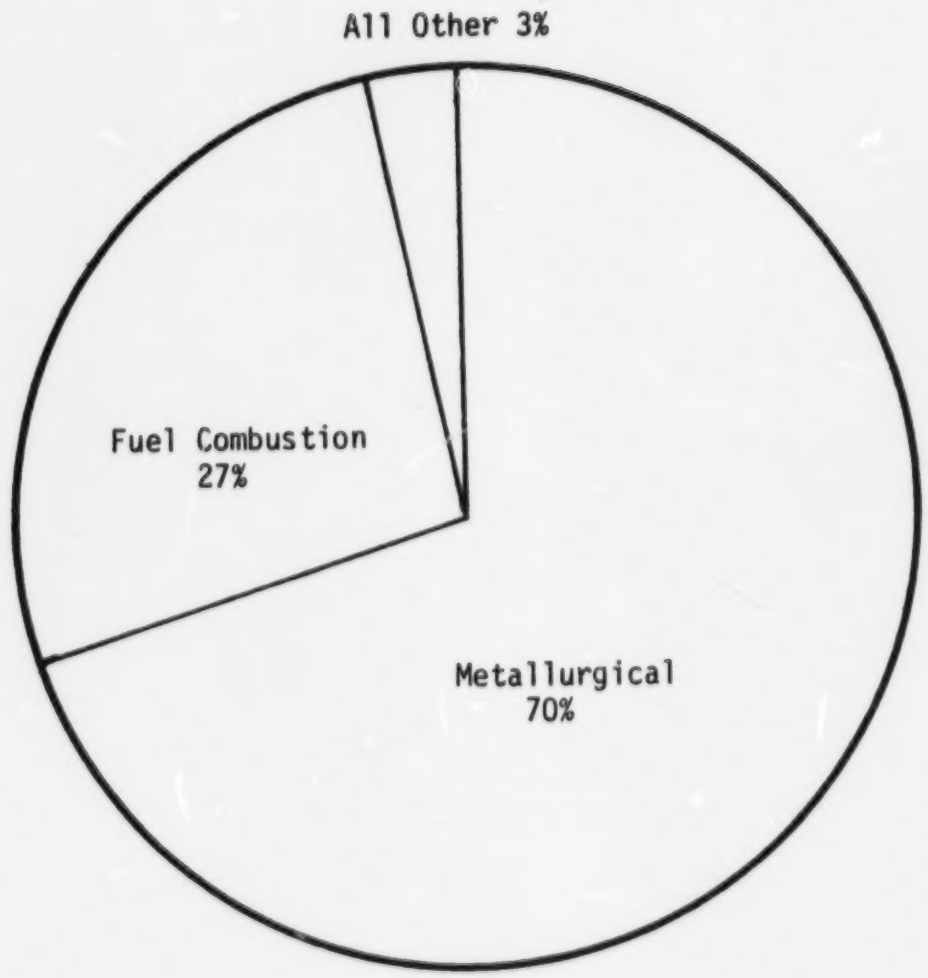

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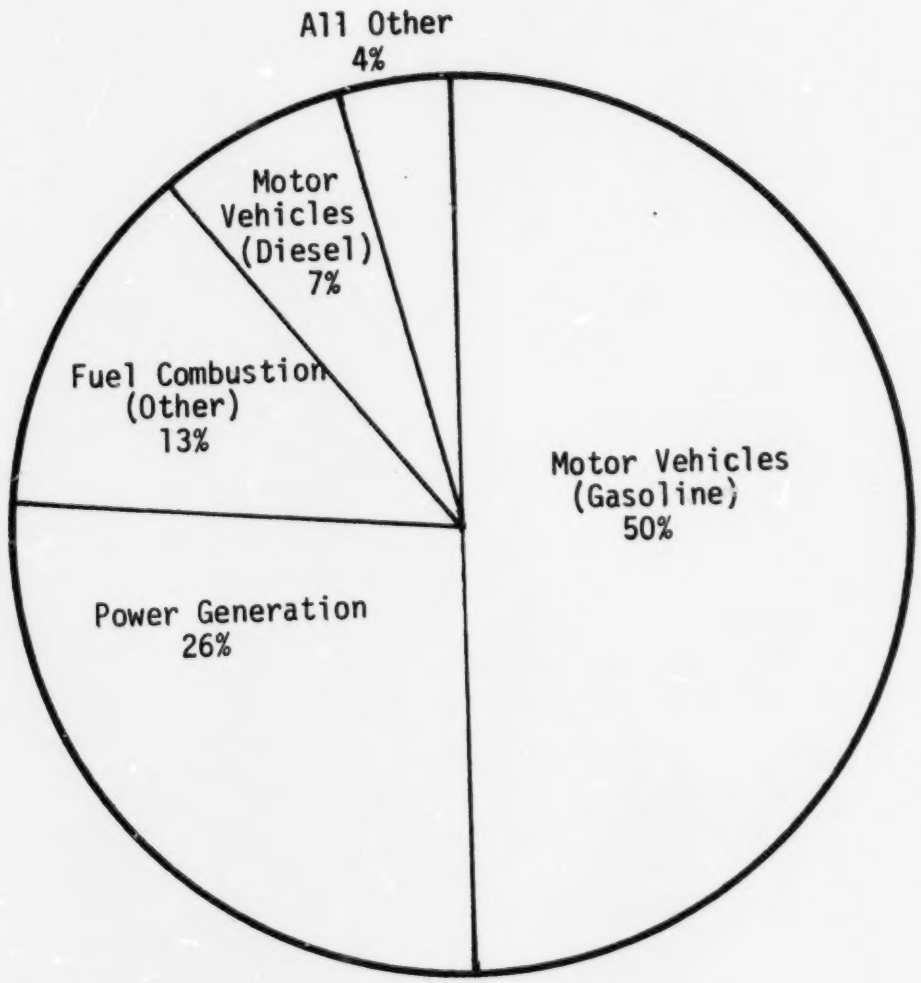

NO_x Emissions

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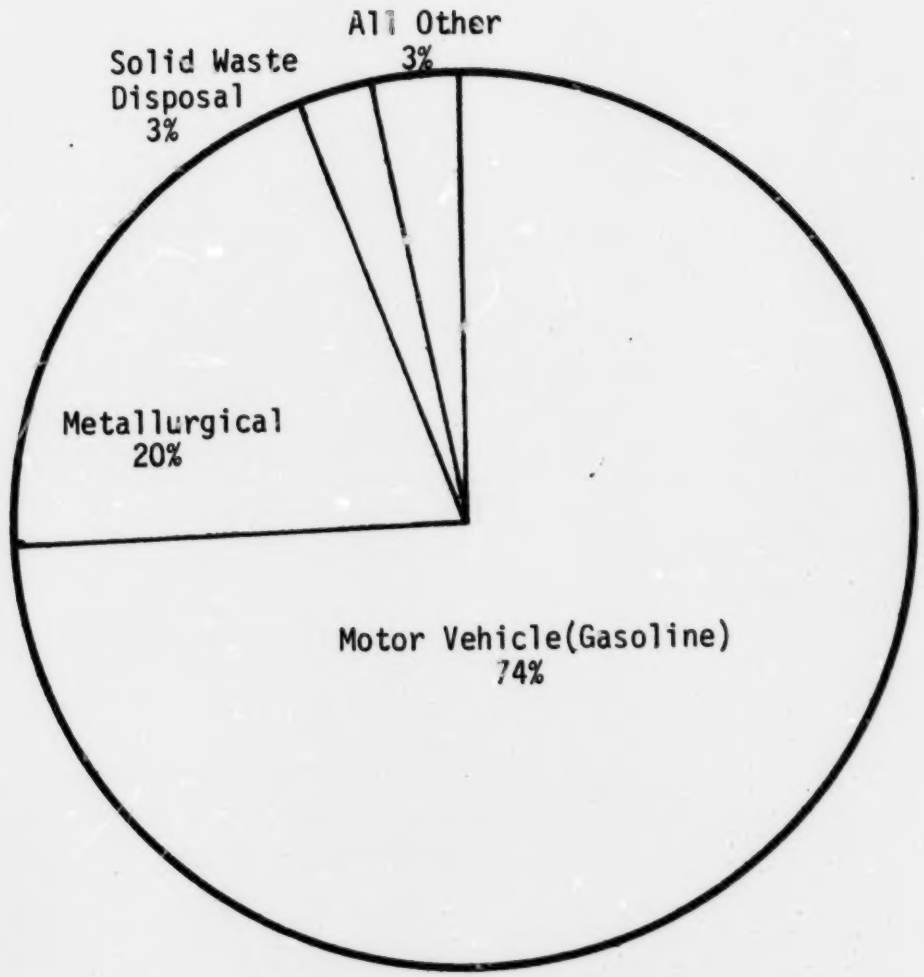
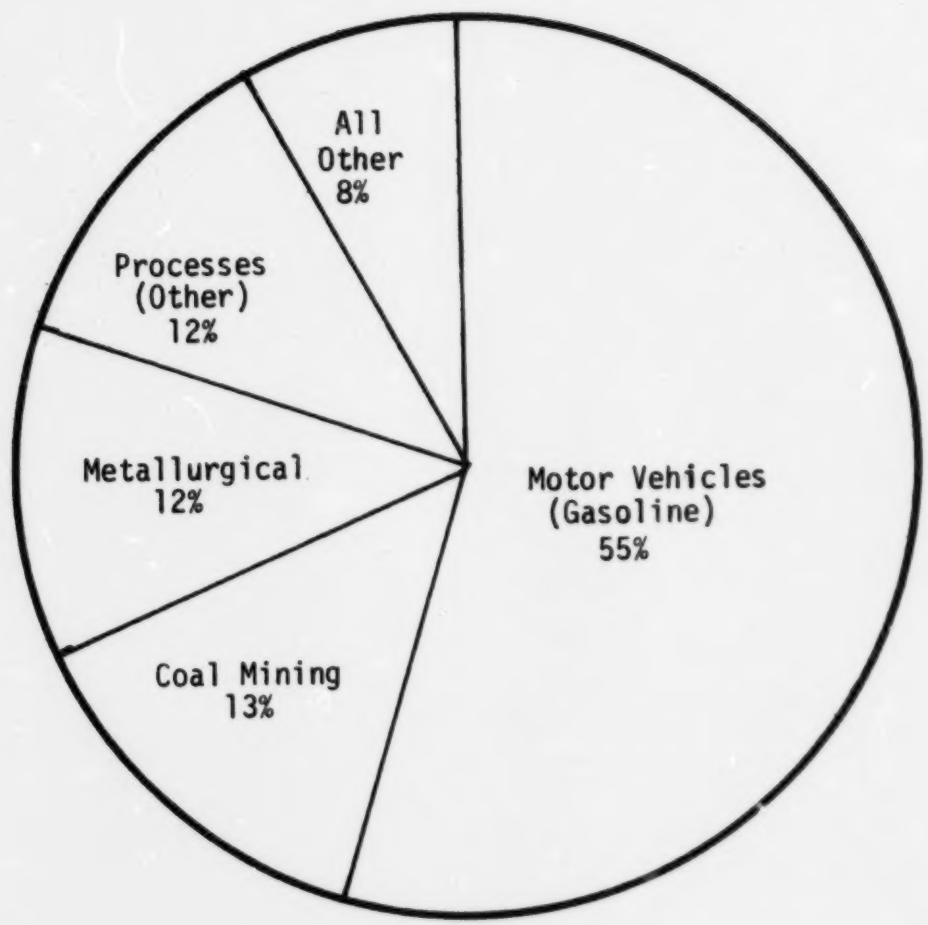
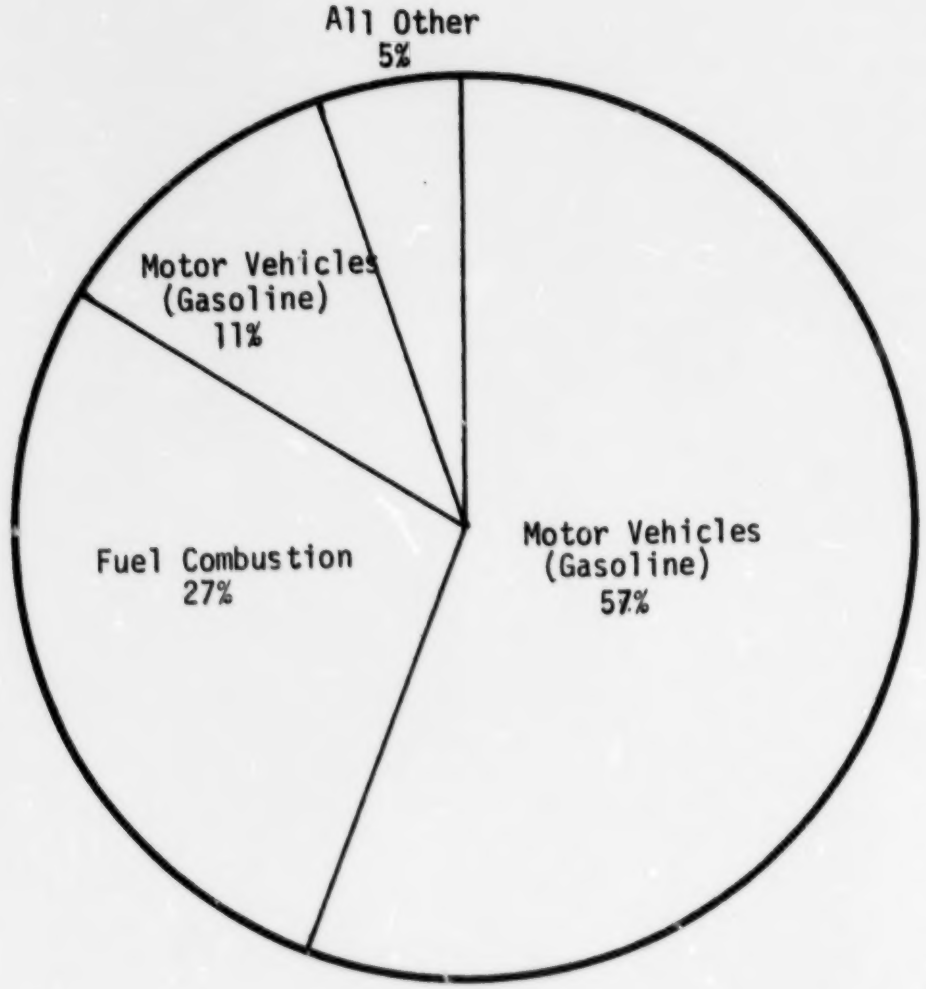


CO Emissions



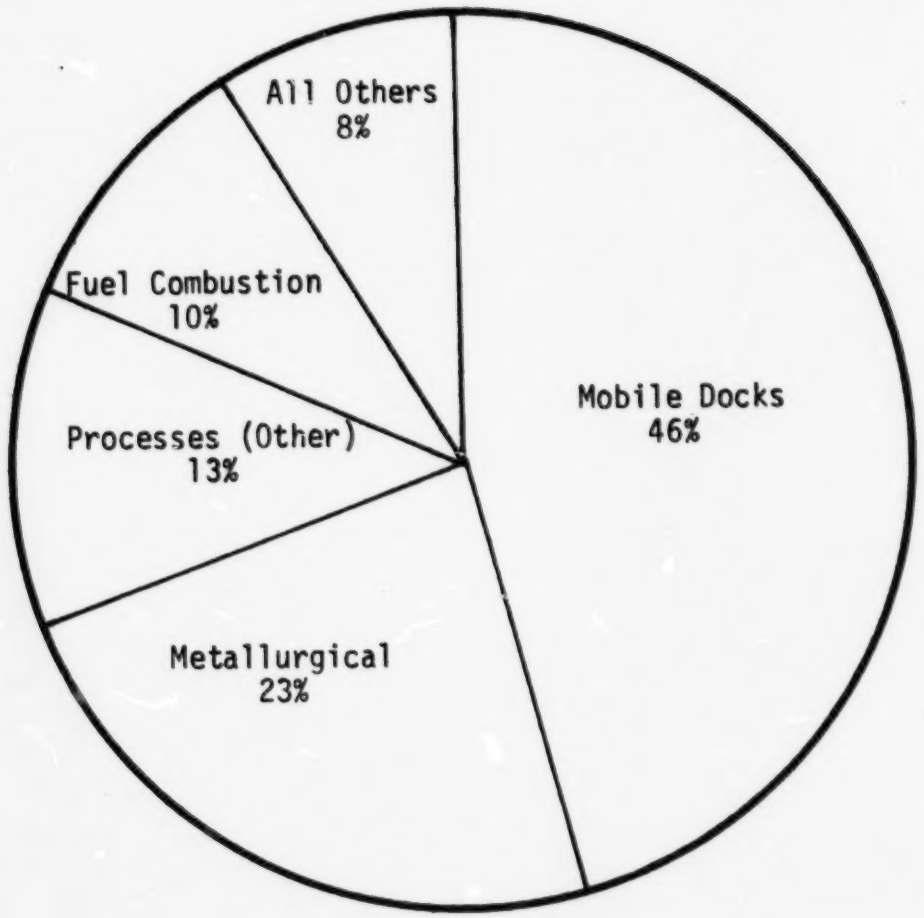
HC Emissions

BIRMINGHAM GRID

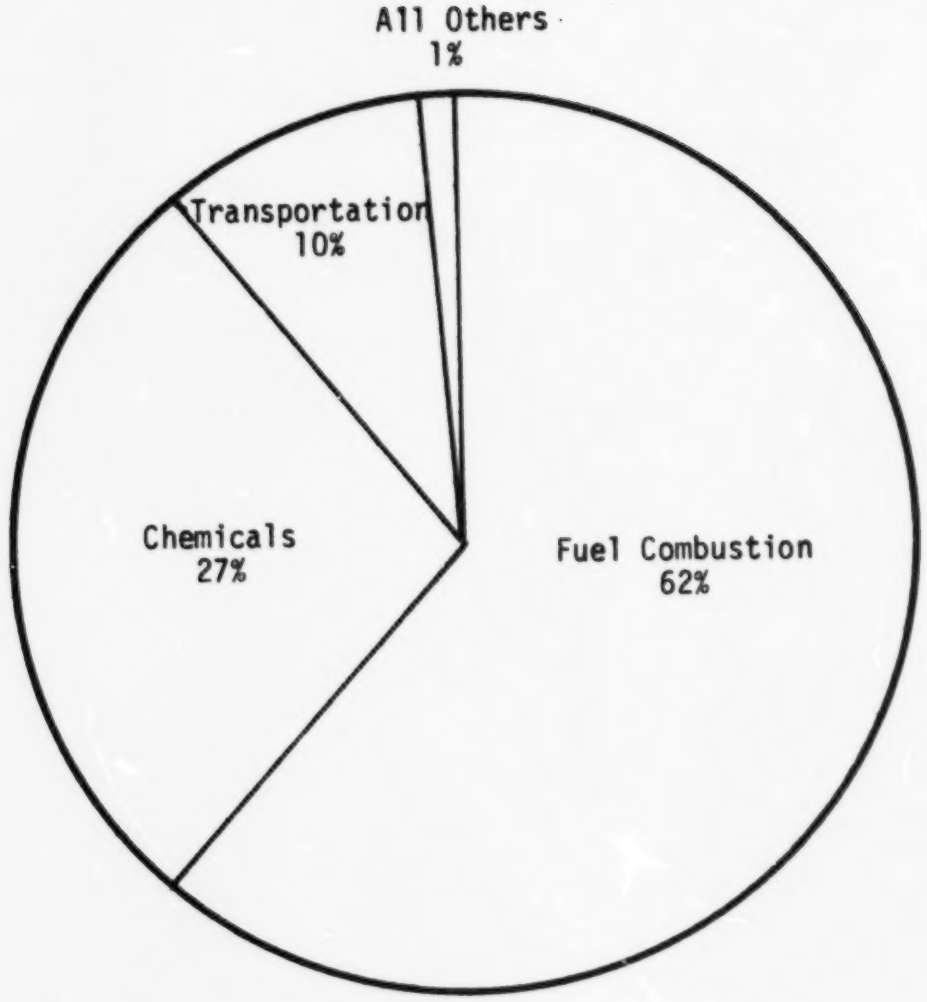


NO_x Emissions

Region 005

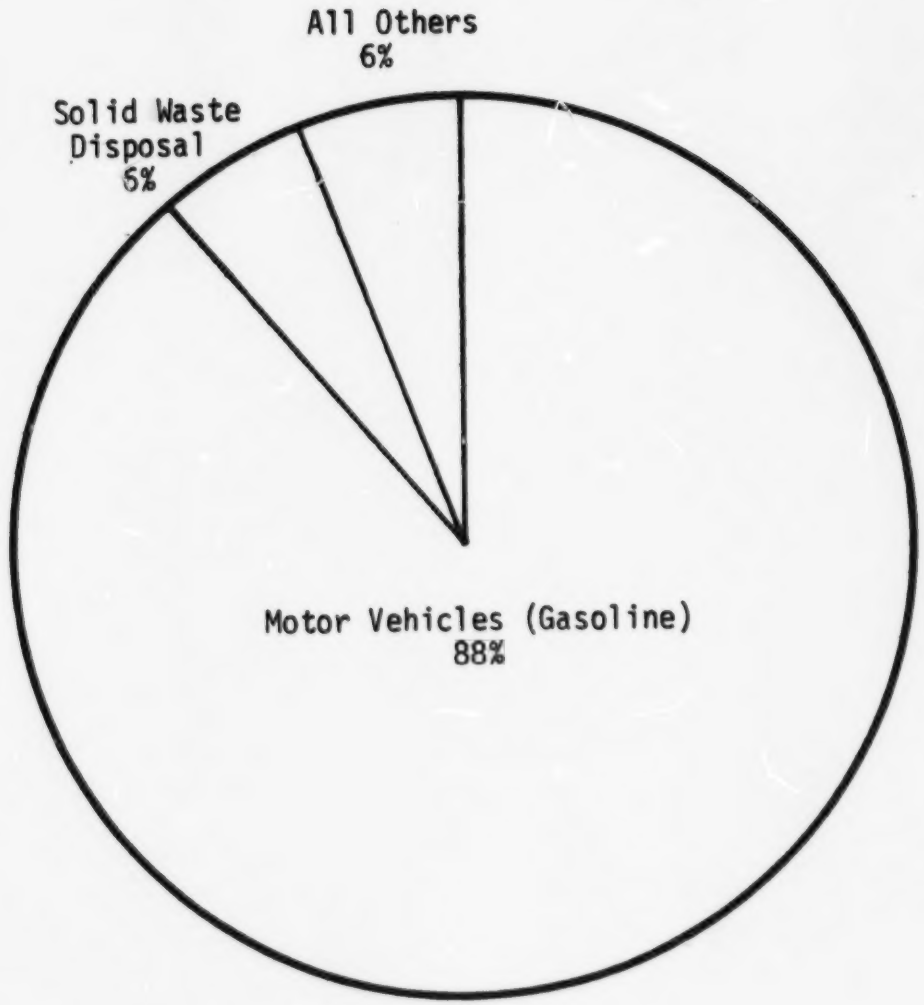


Particulate Emissions

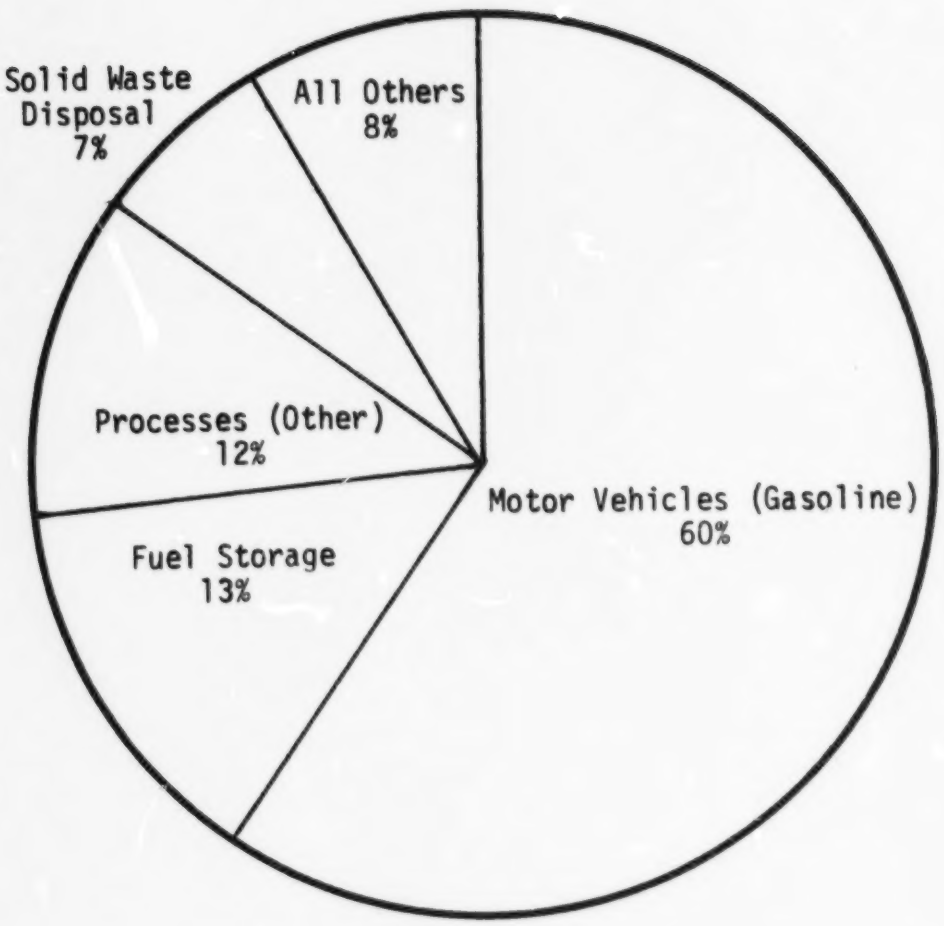


SO_2 Emissions

Region 005

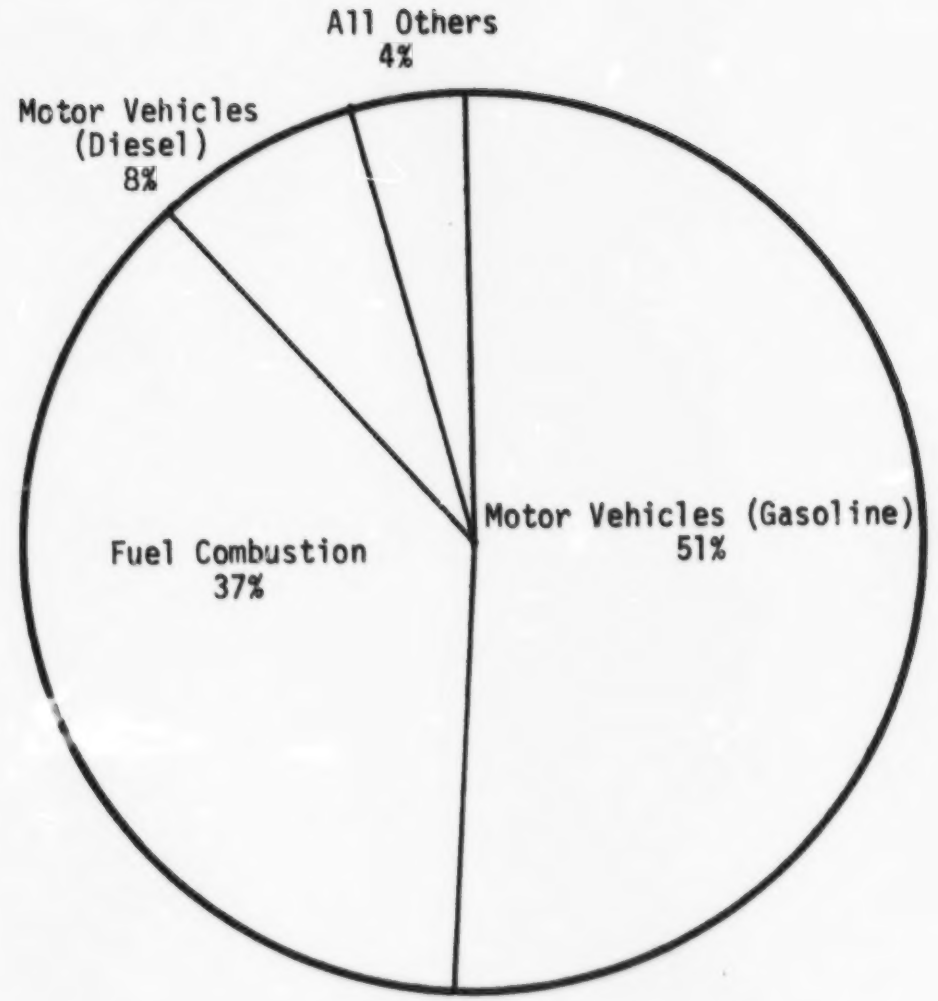


CO Emissions



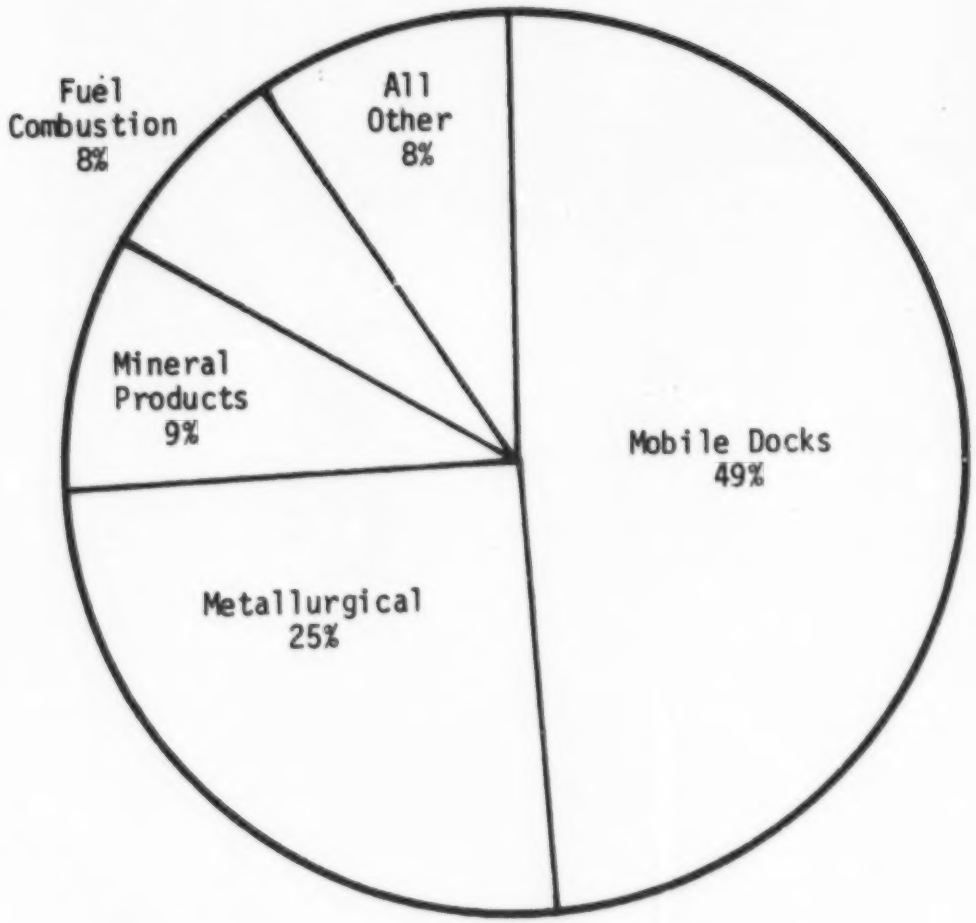
HC Emissions

Region 005

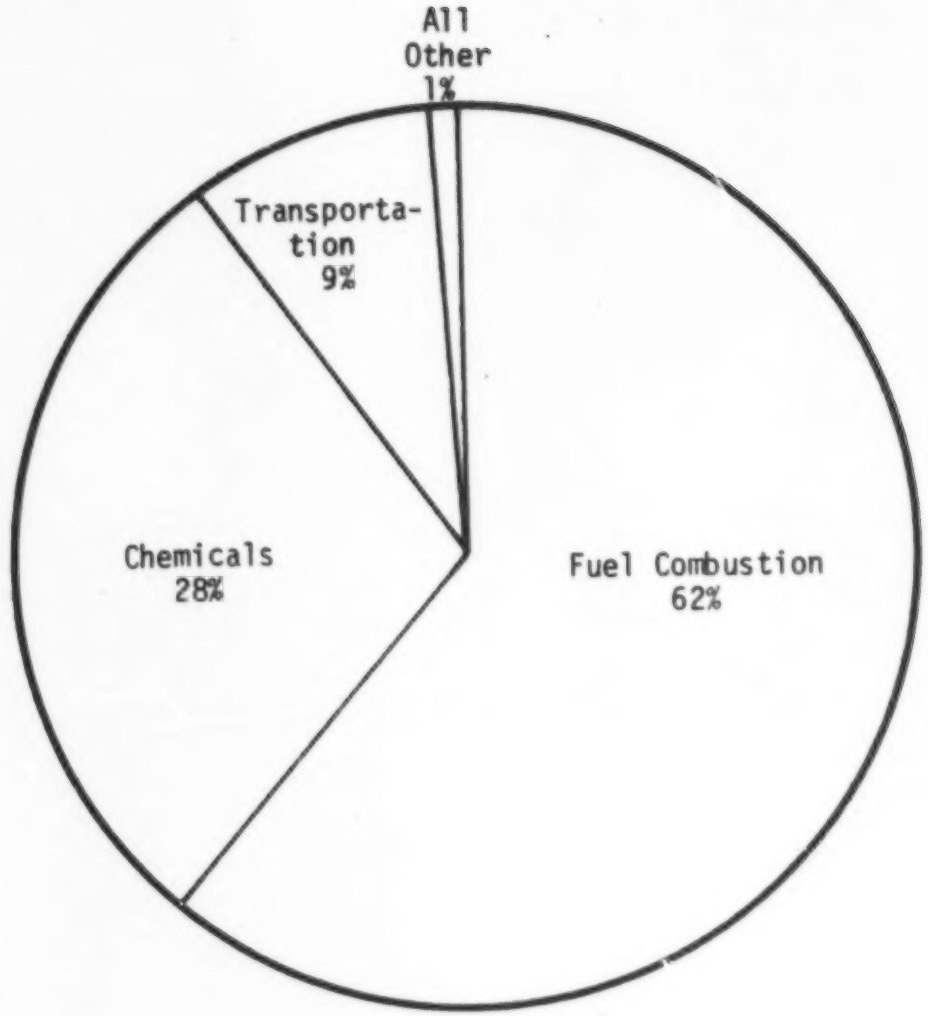


NO_x Emissions

Region - Mobile County

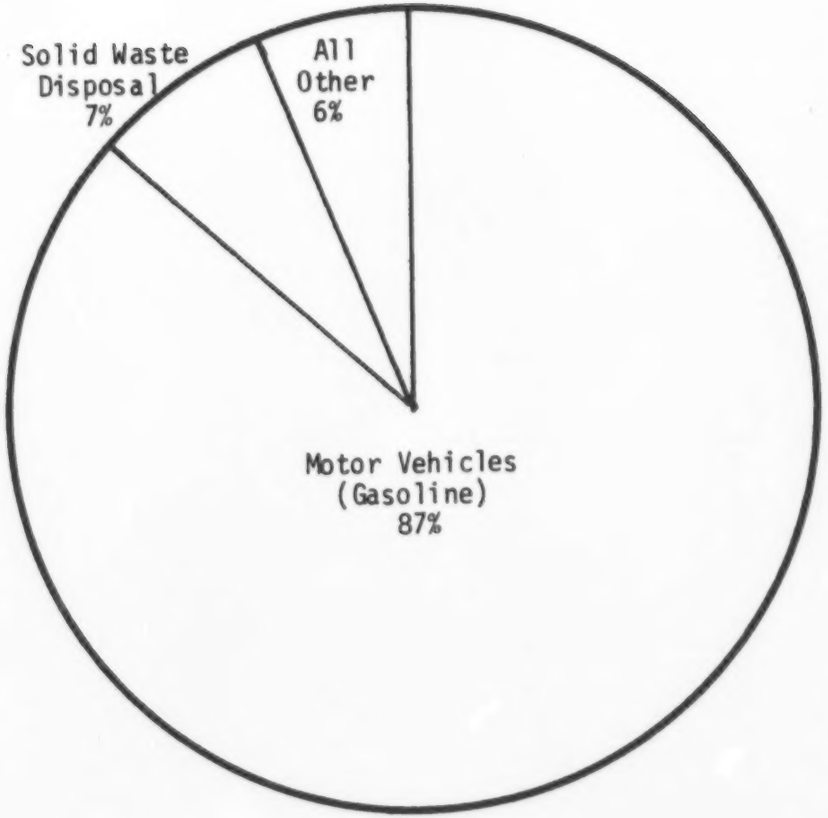


Particulate Emissions



SO_2 Emissions

Region - Mobile County



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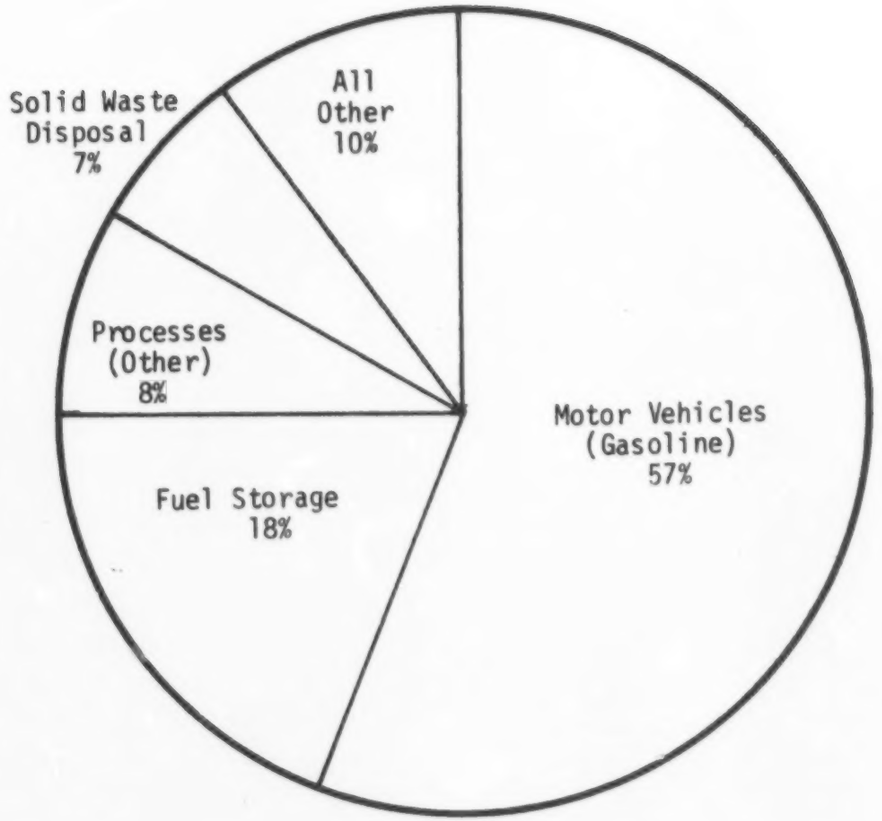
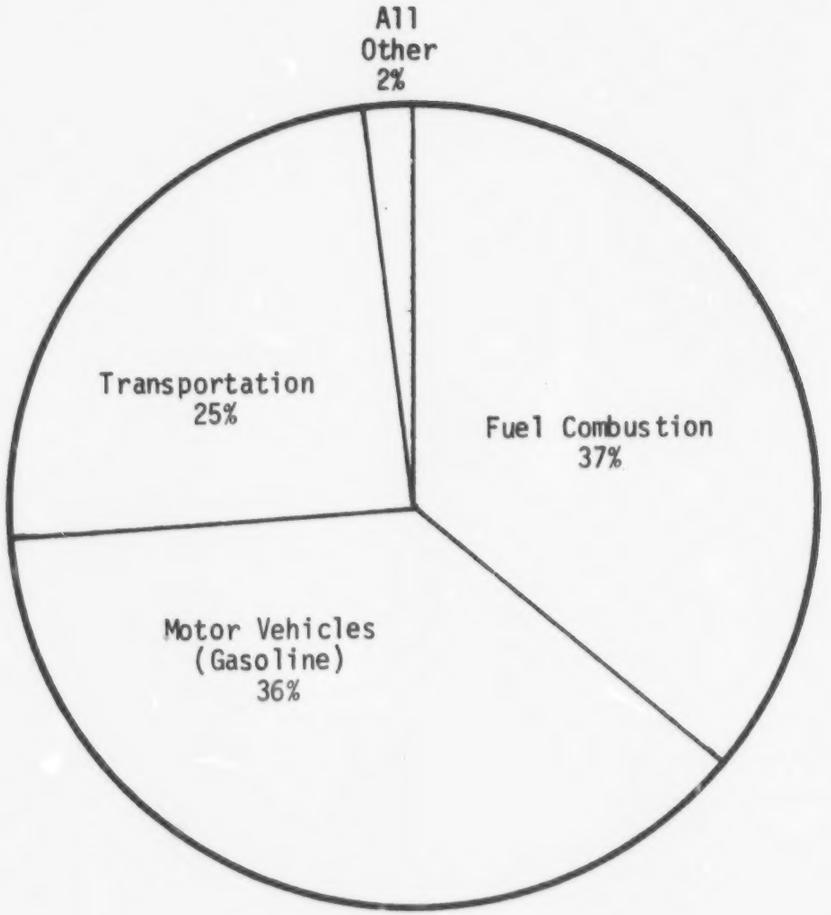


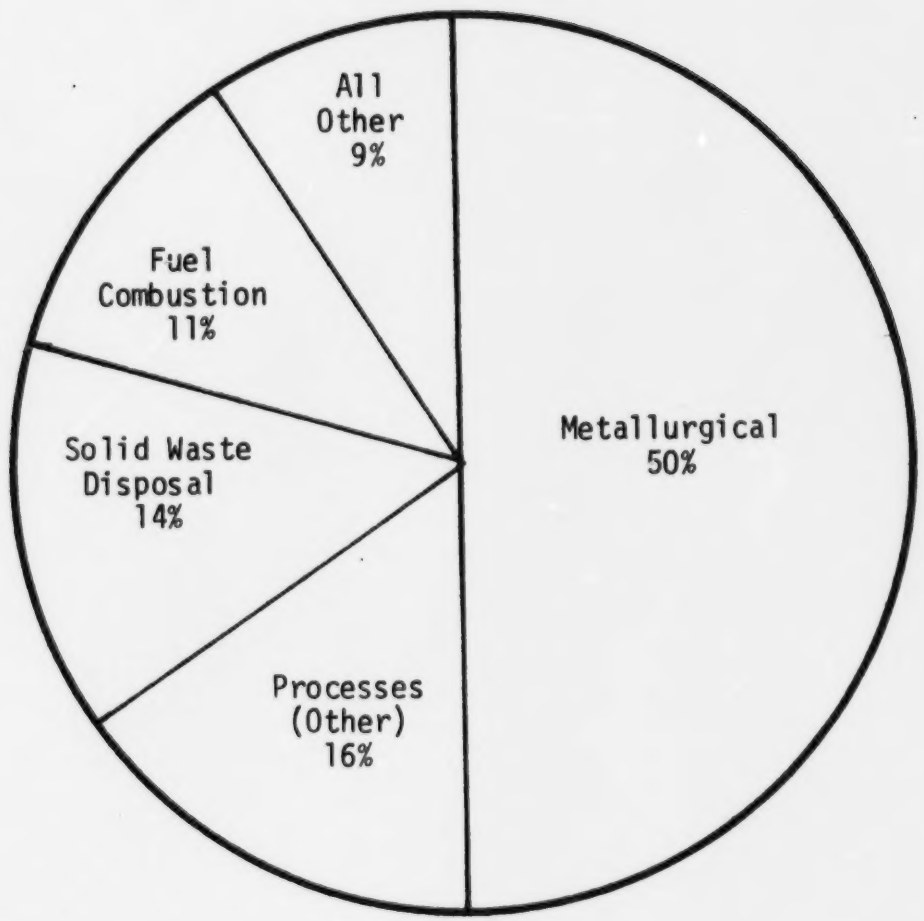
HC Emissions

Region - Mobile County

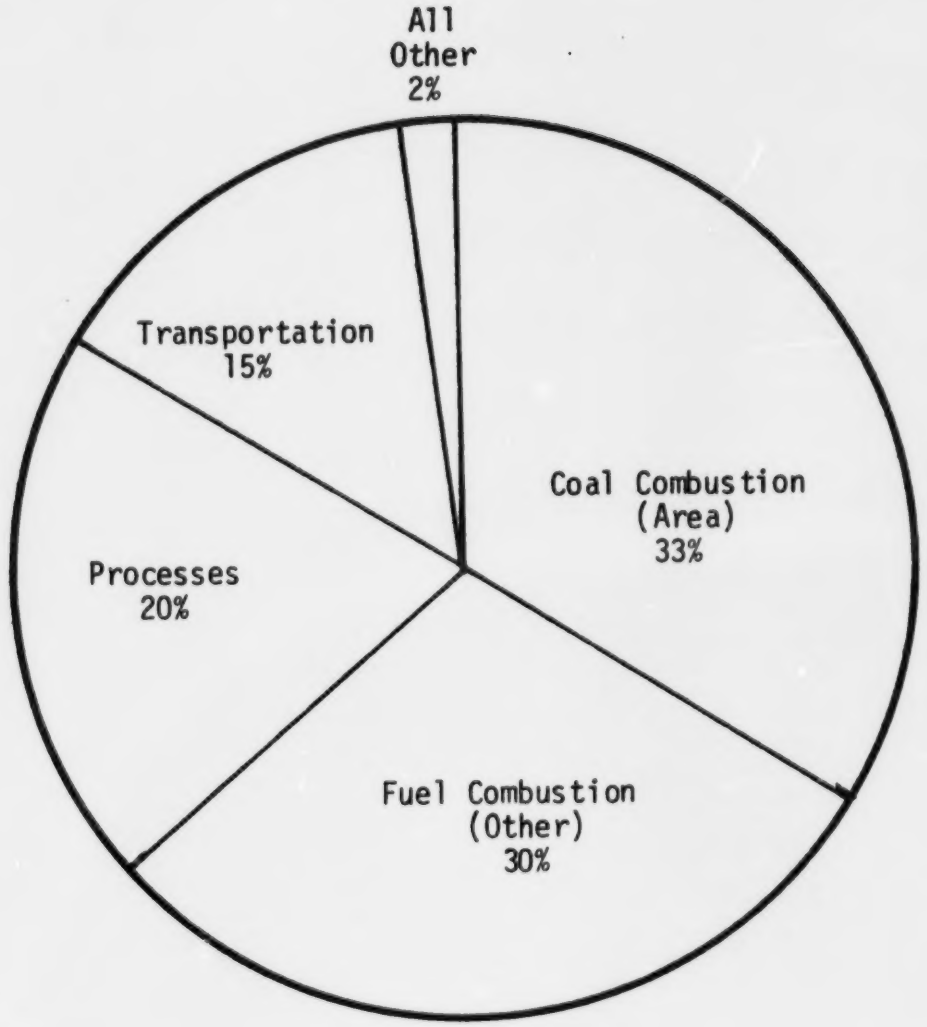


NO_x Emissions

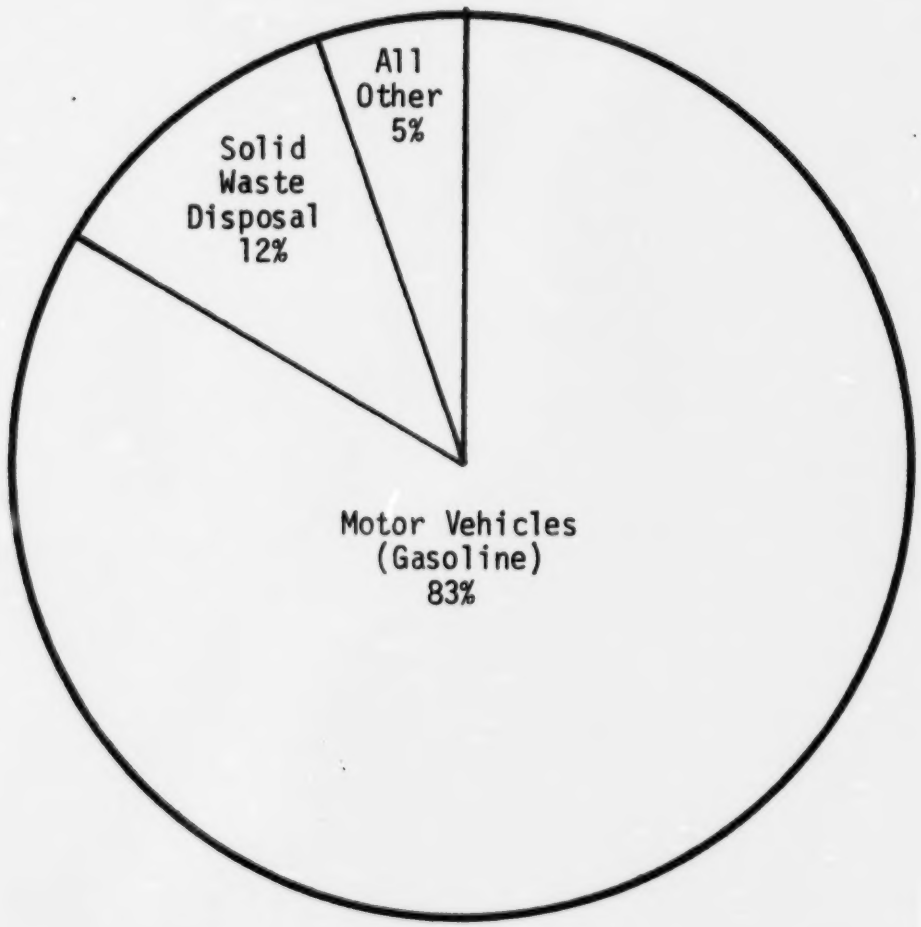
Region 6



Particulate Emissions



SO_2 Emissions



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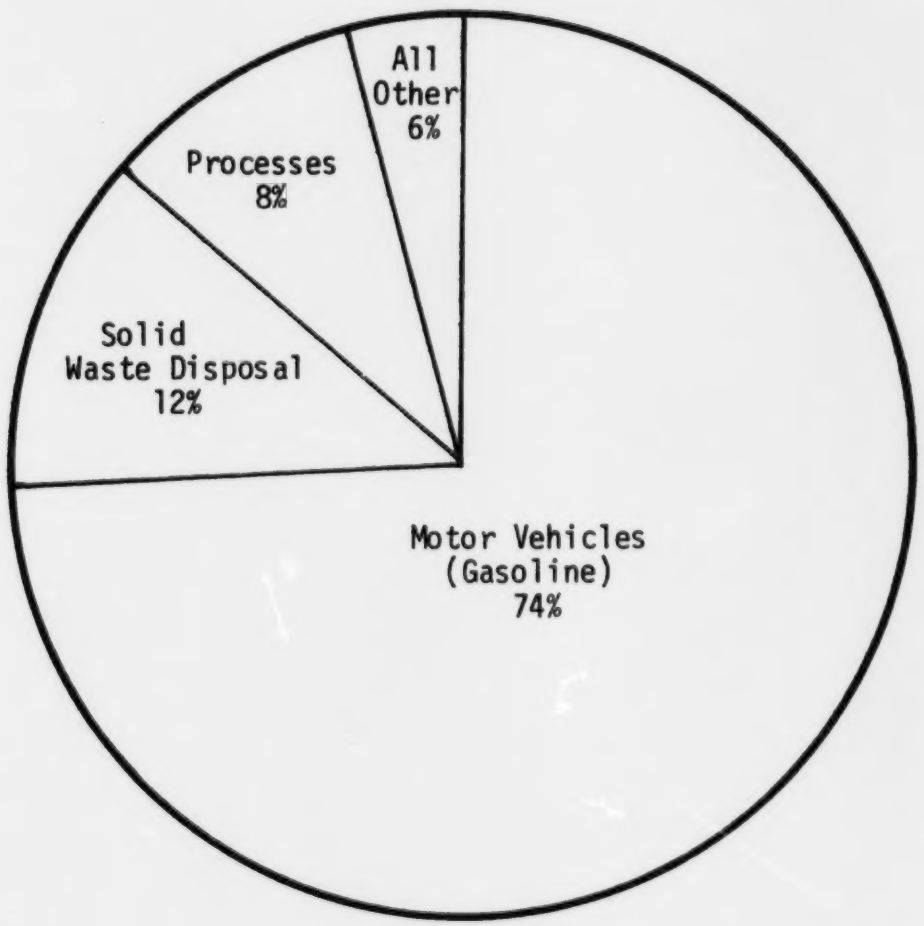
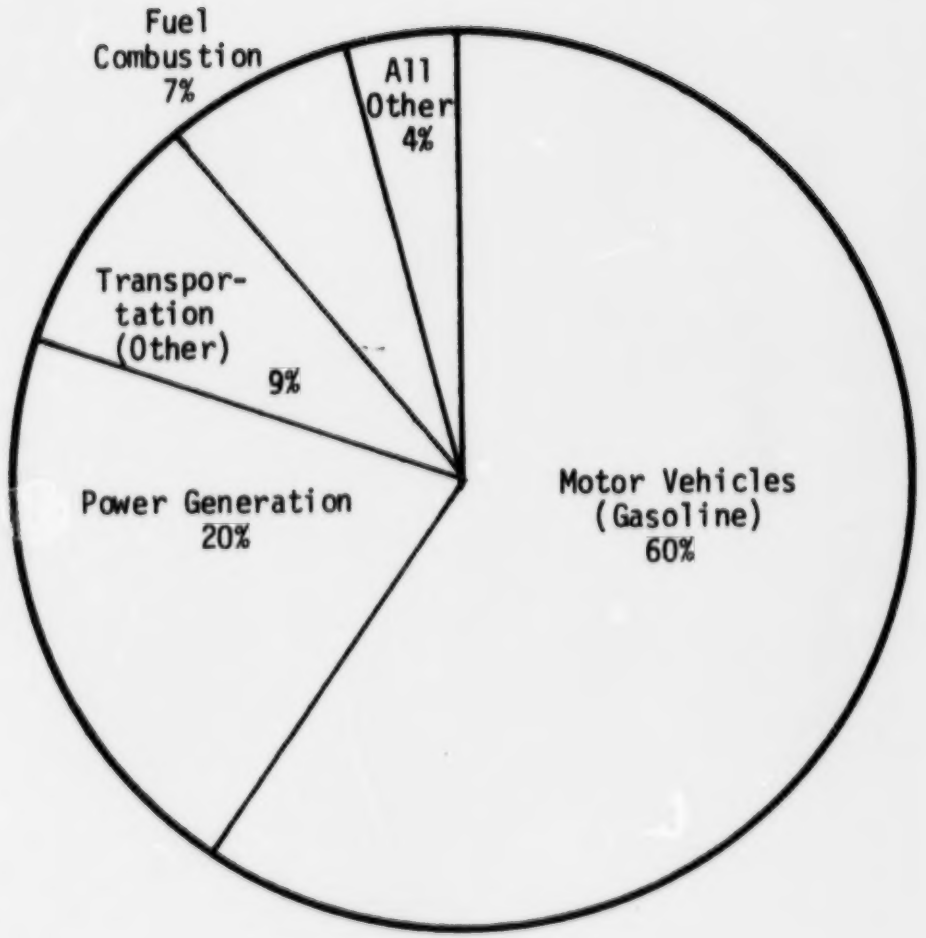


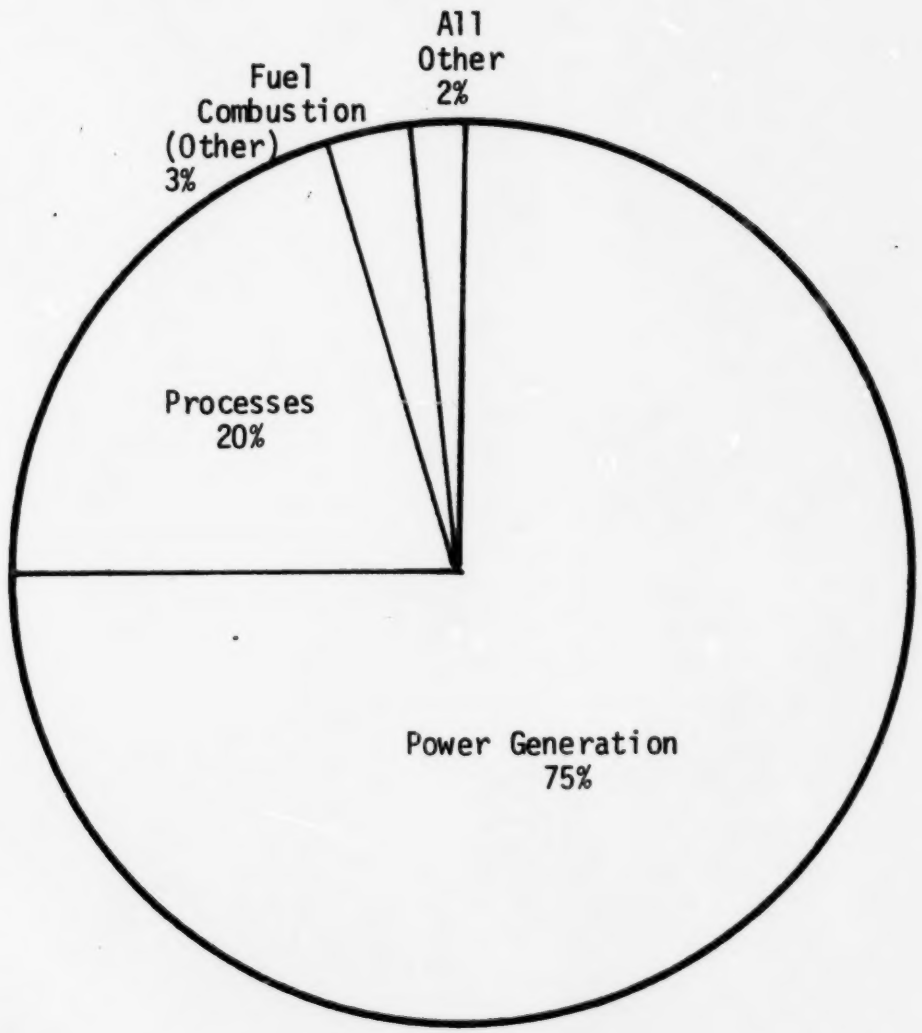
HC Emissions

Region 6

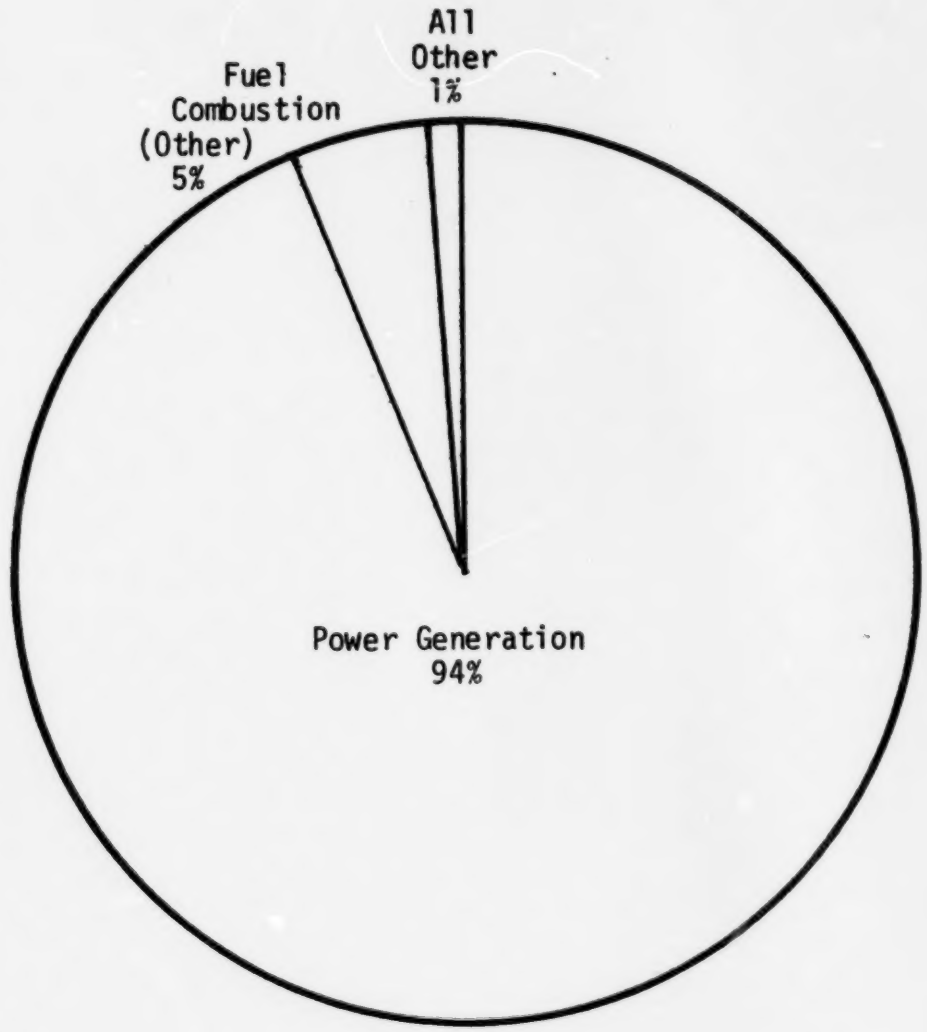


NO_x Emissions

Region 7

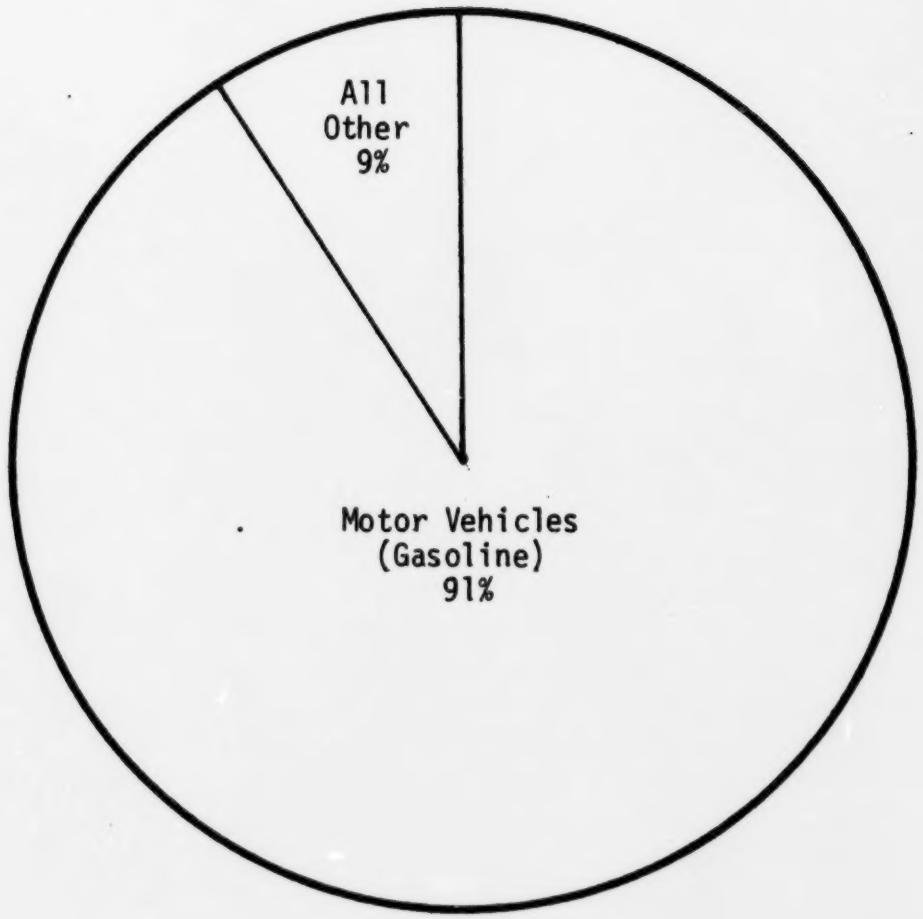


Particulate Emissions



SO_2 Emissions

Region 7



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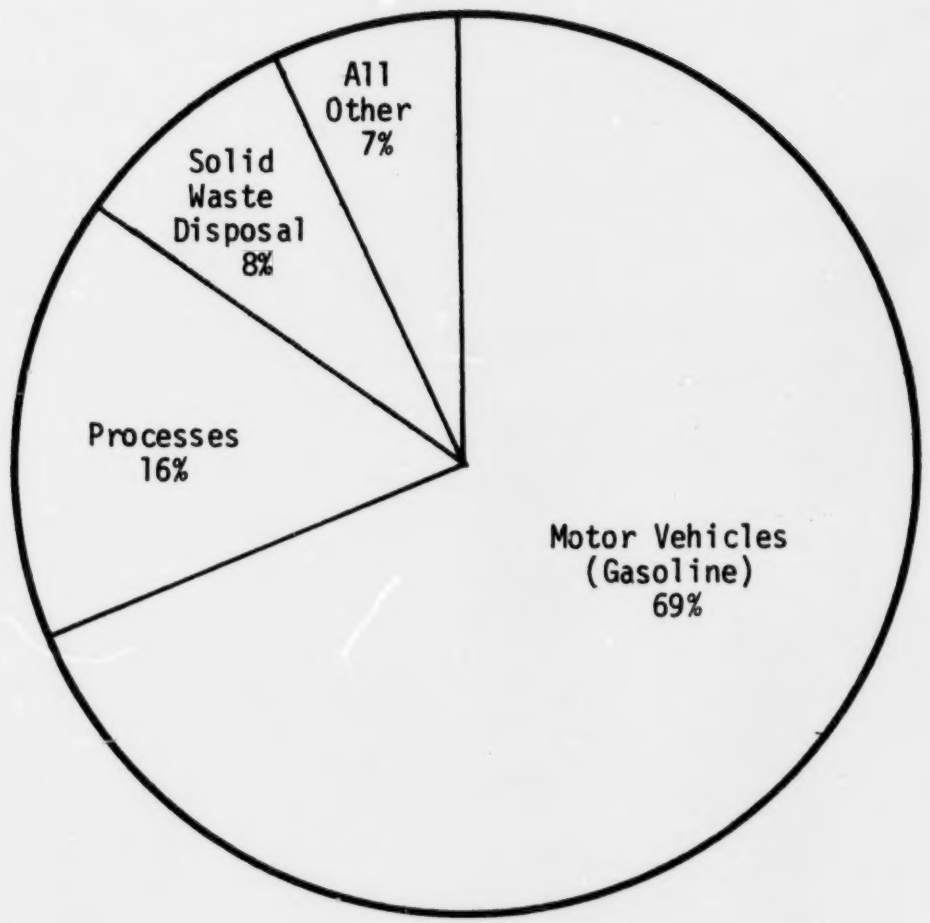
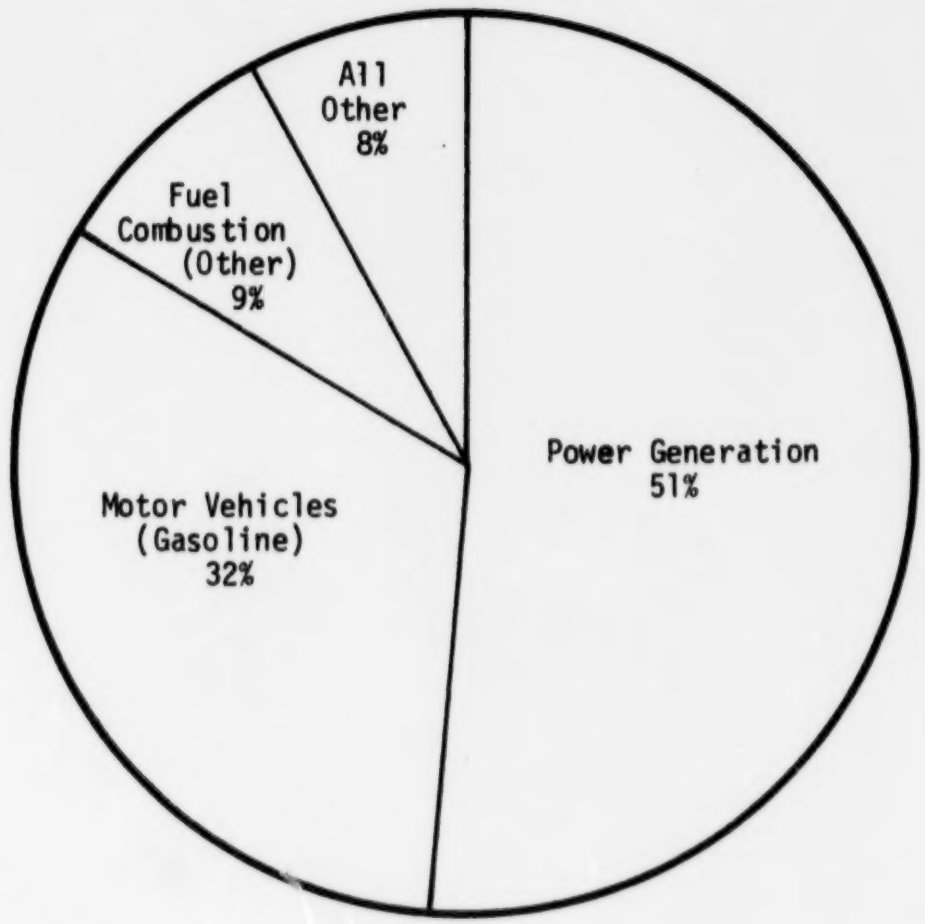


HC Emissions

Region 7



NO_x Emissions

6. REFERENCES

6.1 U. S. GOVERNMENT PUBLICATIONS AND UNPUBLISHED DATA

6.1.1 Bureau of Mines Publications

- "Natural Gas," Minerals Yearbook, 1969.
- "Coal - Pennsylvania Anthracite," Minerals Yearbook, 1969
- "Crude Petroleum and Petroleum Products," Minerals Yearbook, 1969.
- "Coal - Bituminous and Lignite," Minerals Yearbook, 1969.
- "Sales of Fuel Oil and Kerosine in 1969," Mineral Industry Surveys.
- "Sales of Liquefied Petroleum Gases and Ethane in 1969," Mineral Industry Surveys.
- Phone conversation with Mr. Westerstraum.

6.1.2 Bureau of Census Publications

- "1970 Census of Housing - Alabama," January 1971.
- "1960 Census of Housing"
- "1970 Census of Population (Advance Report)," December 1970.
- "Wholesale Trade - Petroleum Bulk Stations and Terminals," December 1970.
- "Retail Trade - Gasoline Service Stations and LP Gas Dealers," March 1971.
- "Wholesale Trade - Alabama," November 1969.
- "Retail Trade - Alabama,"
- "Alabama", 1967 Census of Manufacturing, September 1970.

6.1.3 Department of Agriculture Publications

- 1969 Wildfire Statistics, Forest Service, July 1970.
- Phone conversation with Mr. Dieterich (U.S. Department of Agriculture), 1970 prescribed burning totals for Alabama.

6.1.4 Department of Commerce Publications

- "Alabama Climatological Data," July 1970.
- "Alabama Climatological Data," July 1969.

6.1.5 Department of Health, Education and Welfare Publications

- "Atmospheric Emissions from Coal Combustion," April 1966.
- "EPA Emission Factors," McGraw and Duprey, (Preliminary Document) April 1971.
- "Air Pollutant Emission Inventory Techniques," Bierbaum and Gedgaudas.
- "The Fuel of Fifty Cities", Ernst and Ernst, November 1968.

6.2 STATE OF ALABAMA PUBLICATIONS AND UNPUBLISHED DATA

- "Estimates of Population, Employment, and Land Use - Birmingham Urban Area - 1965 and 1990," Birmingham-Jefferson County Regional Planning Commission, August 1968.
- "Land Use Plan - Regional Development Plan," Birmingham Regional Planning Commission, March 1970.
- "Land Use Survey," Birmingham-Jefferson County Regional Planning Commission, November 1966.
- "1968 Land Use," South Alabama Regional Planning Commission.
- "Open Space Program," South Alabama Regional Planning Commission, June 1969.
- "Community Solid Waste Disposal - Land Sites - Alabama," August 20, 1969, unpublished manuscript.
- "Estimated solid waste burned by each county - Alabama, December 1970, unpublished manuscript.
- "Monthly Fire Report - 1970," State of Alabama Division of Forestry.
- "Alabama State Highway Traffic Study, " computer output.

6.3 OTHER REFERENCES

- Phone conversation with Mr. Hodges, American Petroleum Institute, Statistical Division.

APPENDIX A

POINT SOURCE FORMS

STATE OF ALABAMA
AIR POLLUTION CONTROL COMMISSION
AIR CONTAMINANT EMISSIONS SURVEY

Information is to be representative of Calendar Year _____

Name _____
Person to contact regarding this report _____ Title _____ Phone _____
Mailing address _____
Plant address _____
Nature of business (Products) _____
Employees at plant location: Less than 100 _____ 100 or more _____

SECTION I–FUEL USE FOR GENERATION OF HEAT, STEAM, AND POWER

Normal operating schedule _____ Hours per day _____ Days per week _____ Weeks per year
Seasonal and/or peak operation period (Specify) _____
Estimate of percent of total fuel consumed to provide space heat _____

A	B	C	D	E	F	G	H	I	J	K	L	M
Sources or No. of boilers [a]	Size of unit (input) [b], 10^6 Btu/hr	Type unit [c]	Fuel data [d]					Air cleaning equipment		Estimate of contaminants [m]		Stack Height (feet)
			Type fuel [e]	Amount per year [f]	Heat content [g], Btu	Percent sulfur [g,h]	Percent ash (coal only) [g,h]	Type [i]	Efficiency [j], %	Type [k]	Quantity [l]	

a Multiple sources may be grouped if units burn the same fuel and are similar in size and type.
b Nameplate data are sufficient.
c Hand-fired, underfeed, traveling-grate or spreader stoker, cyclone furnace, pulverized, wet or dry bottom with or without fly ash reinjection, rotary or gun-type oil burner, etc.
d Fuel data are to be reported on an "as burned basis."
e Coke, bituminous coal, anthracite coal; No. 1, 2, 4, 5 or 6 fuel oil; natural gas, LPG, refinery or coke oven gas, wood, etc.
f Solid fuel, tons; liquid fuel, gallons; gaseous fuel, 100 cubic feet.
g If unknown, please give name and address of fuel supplier.
h Sulfur and ash content for each fuel should be a weighted average.
i Cyclone, scrubber, electrostatic precipitator, baghouse, settling chamber, etc.
j Please state if efficiency is a rated or operating efficiency.
k Fly ash, sulfur oxides, etc.
l Pounds or tons per year.
m Give stack test data if available, or otherwise specify basis used.

NOTE: USE ADDITIONAL SHEETS IF NEEDED.

STATE OF ALABAMA
AIR POLLUTION CONTROL COMMISSION
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SECTION III – PROCESS EMISSIONS

Normal operating schedule _____ Hours per day _____ Days per week _____ Weeks per year
Seasonal and/or peak operation period _____
Note: For intermittent operations, indicate approximate frequency and duration so that estimates of yearly and seasonal emissions may be obtained.

A	B	C	D	E	F	G	H	I
Processes or operations releasing contaminants to atmosphere [a, b]	Materials processed and/or used at operation		Quantity of gas discharged from process or operation	Type and efficiency air cleaning equipment [e, f]	Estimate of contaminants		Basis of estimate [h] (Please specify basis)	Stack Height (feet)
	Type [c]	Quantity per year [d]			Type [g]	Quantity per year [d]		

a Multiple sources may be grouped if units are similar in size and type.
b Sulfuric acid - chamber, aluminum smelting-crucible furnace, iron melting-cupola, cement manufacture - dry process, solvent cleaning, or other (please specify).
c Acid produced, tons; metal charged or processed, tons; cement produced, bbl.; solvent consumed, gallons; etc. per year. Specific quantities per year are not required if complete emission rate quantities are given in columns F and G.
d Pounds, tons, or gallons per year.
e Baghouse, electrostatic precipitator, cyclone, settling chamber, wet scrubber, etc.
f Please state if efficiency is a rated or operating efficiency.
g Dust, fume, gas, etc. emitted: iron oxide, mineral or rock dust, trichlorethylene, formaldehyde, sulfur dioxide, etc.
h Process material balance studies, field tests by plant or by equipment manufacturers, or other basis.

Please submit any additional material or data considered pertinent (reports, summaries, test results, maps, flow diagrams) with this form.

NOTE: USE ADDITIONAL SHEETS IF NEEDED.

Date | Name and title of official submitting reports

STATE OF ALABAMA
AIR POLLUTION CONTROL COMMISSION
AIR CONTAMINANT EMISSIONS SURVEY

SECTION II – REFUSE DISPOSAL

'use disposed of _____ On site _____ Off site – Location of disposal site and/or name of hauler _____
mal on-site combustion operating schedule _____ Hours per day _____ Days per week _____ Weeks per year
sonal and/or peak operation period (Specify) _____

A	B	C	D	E	F	G	H	I
Waste material		Method of disposal (See code below)	Incinerator capacity, lb/hr	Auxiliary fuel used [c]	Type and efficiency, air cleaning equipment [d, e]	Estimate of contaminants [h]		Stack Height (feet)
Type [a]	Amount per year [b]					Type [f]	Quantity per year [g]	

Rubbish, garbage, mixed garbage and rubbish, waste paper, wood chips or sawdust, etc.
Tons, pounds or gallons/year.
ndicate whether auxiliary fuel is used in incinerators and pit burning, and the amount.
Wetted baffles, impingement scrubbers, afterburners, electrostatic precipitator, baghouse, etc.
Please state if efficiency is a rated or operating efficiency.
Solids and/or gases (include chemical description of gases).
Pounds or tons per year.
Give stack test data if available, or otherwise specify basis used.

hod of Disposal Code:

Open-burning dump.
Sanitary landfill. (no burning)
Burned in boiler or furnace.
Incinerator, single chamber (one totally enclosed refractory-lined chamber in which both primary and secondary combustion take place).
Incinerator, multiple chamber (two or more refractory-lined chambers interconnected by gas passage parts or ducts and designed to provide complete combustion of materials.
Incinerator, rotary.
Conical metal burner.
Other (Specify)

NOTE: USE ADDITIONAL SHEETS IF NEEDED.

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POINT SOURCE DATA FORM

A

SOURCE NUMBER	REGION	SIC	SITE	PROCESS CODE	DESCRIPTIVE NAME (a)	COORDINATES KM X	COORDINATES KM Y	POLITICAL JURISDICTION	OWNER (b)	TYPE (c)	OPERATING (hours/year)	STACK PARAMETERS HEIGHT (ft.)	STACK PARAMETERS DIA. (ft.)	STACK PARAMETERS TEMP. (°F)	STACK PARAMETERS VELOCITY (ft/sec)	MAXIMUM GAS VOLUME 10^2 (ACFM)	PLUME RISE (ft^2/sec)	
																		A

SOURCE NUMBER	MAXIMUM PROCESS WEIGHT RATE (lb/hr)	NORMAL PROCESS WEIGHT RATE (lb/hr)	COMMENTS (a)	MAXIMUM BOILER CAPACITY (10^6 BTU/hr)	(d) EF	COAL (tons/year)	(d) EF	RESIDUAL OIL (10^3 Gal/year)	(d) EF	DISTILLATE OIL (10^3 Gal/year)	(d) EF	NATURAL GAS (10^6 CF/year)	HEAT CONTENT COAL 10^6 (BTU/ton)	HEAT CONTENT RESIDUAL OIL (10^3 BTU/Gal.)	HEAT CONTENT DIST. OIL (10^3 BTU/Gal.)	HEAT CONTENT NATURAL GAS (BTU/CF)	
																		B

SOURCE NUMBER	% ASH COAL	SULFUR CONTENT COAL	SULFUR CONTENT RESID.	SULFUR CONTENT DIST.	SULFUR CONTENT NAT. GAS	CONTROL EFFICIENCY PART	CONTROL EFFICIENCY SO_2	DEVICE INDENT	COMMENTS (a)	HAND CALCULATED EMISSIONS (tons/year) PART.	SO_2	CO	HC	NO_2	ALLOWABLE EMISSIONS (tons/year) PART	SO_2	
																	C

SOURCE NUMBER	COMMENTS (a)	
		D

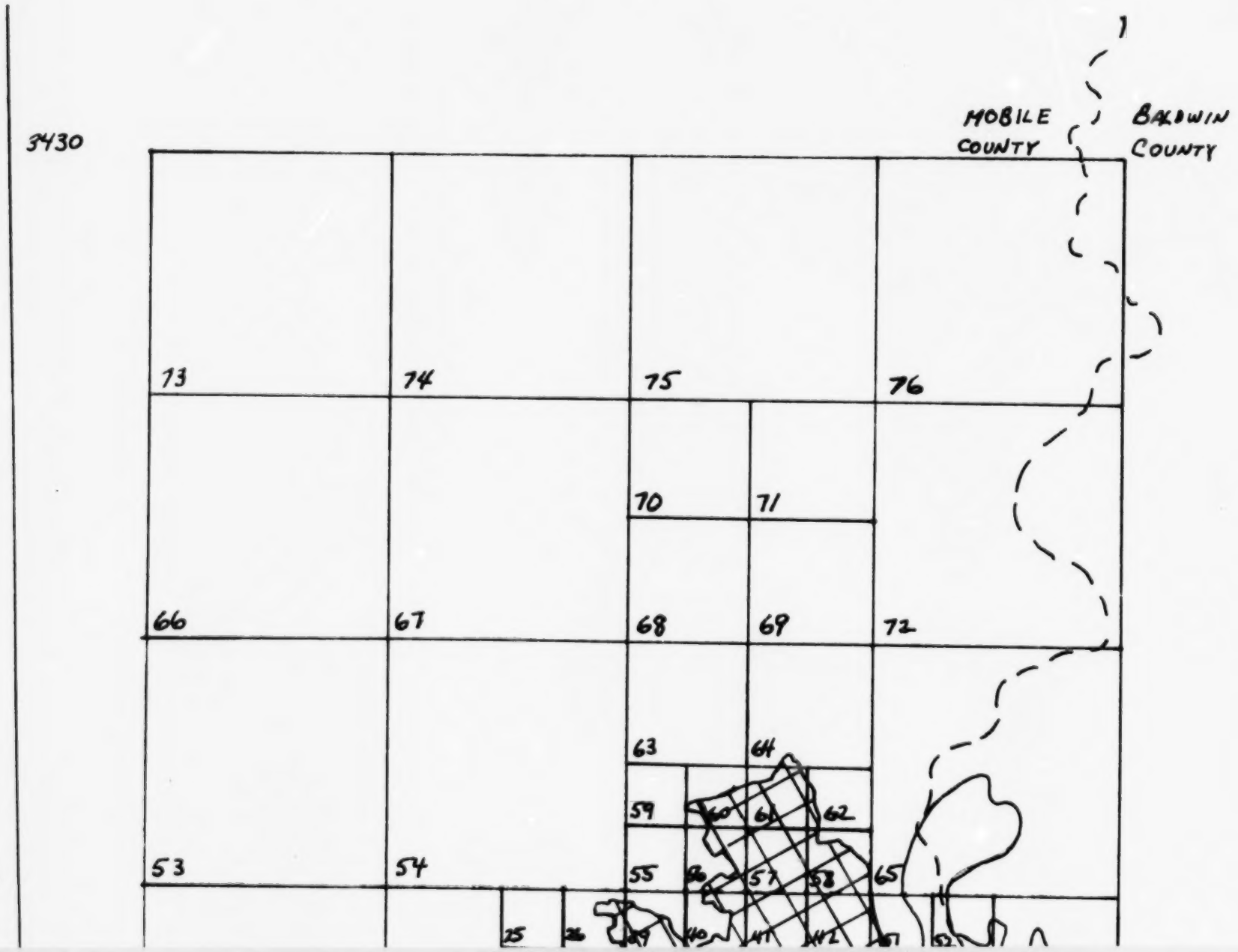
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

(a) Letters and numbers may be put in these columns
(b) Owner → Private = 1; Local = 2; State = 3; Federal = 4; Utilities = 5.
(c) Type → Process = 1; Fuel Combustion = 2; Solid Waste Disposal = 3.
(d) EF → refers to emission factor set number associated with emission factors on emission factor sheet.

All decimal points are implied and are signified by a ▼ between columns.

APPENDIX B

GRID MAPS


MOBILE COUNTY
BALDWIN COUNTY
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3400
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74
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72
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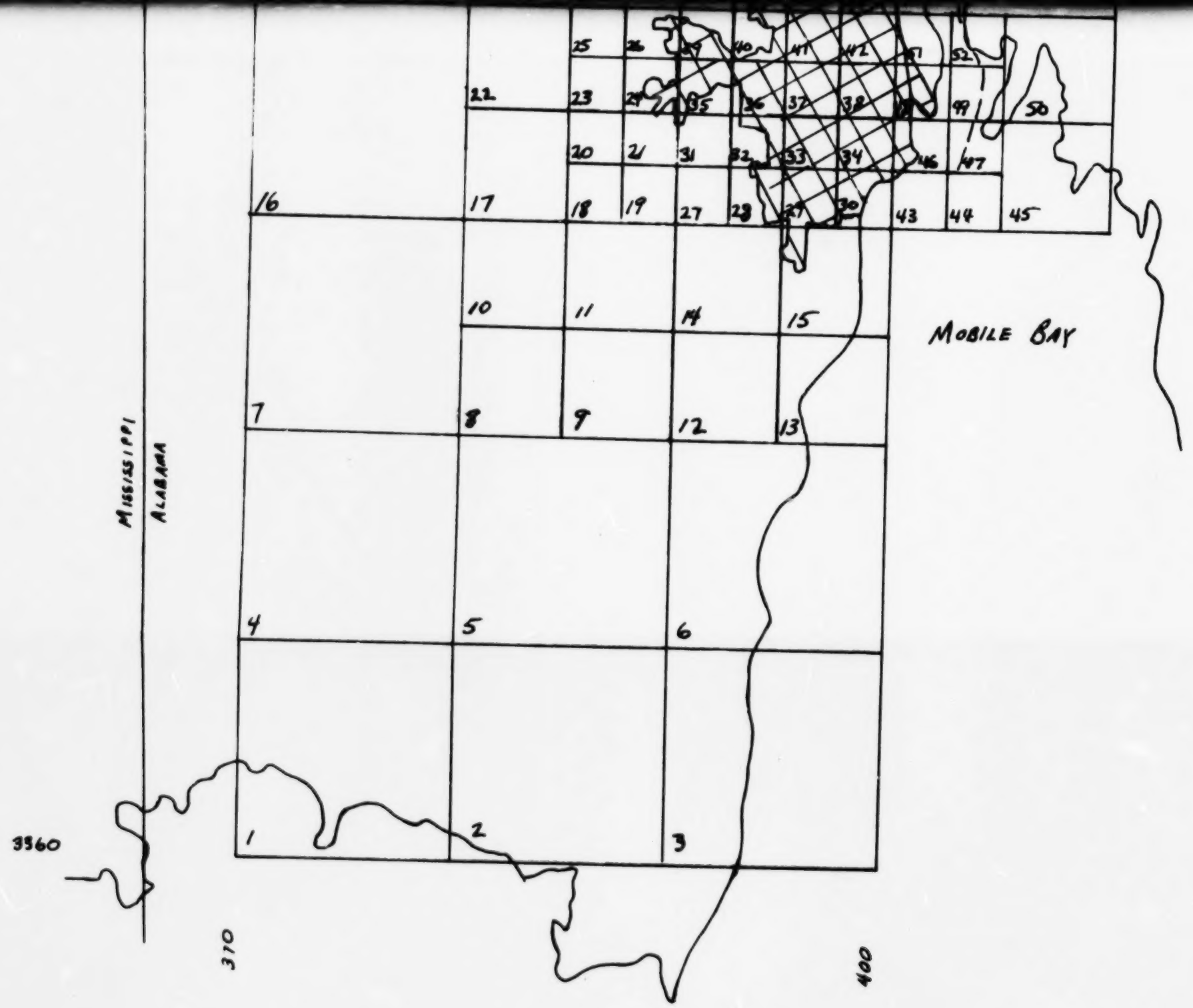
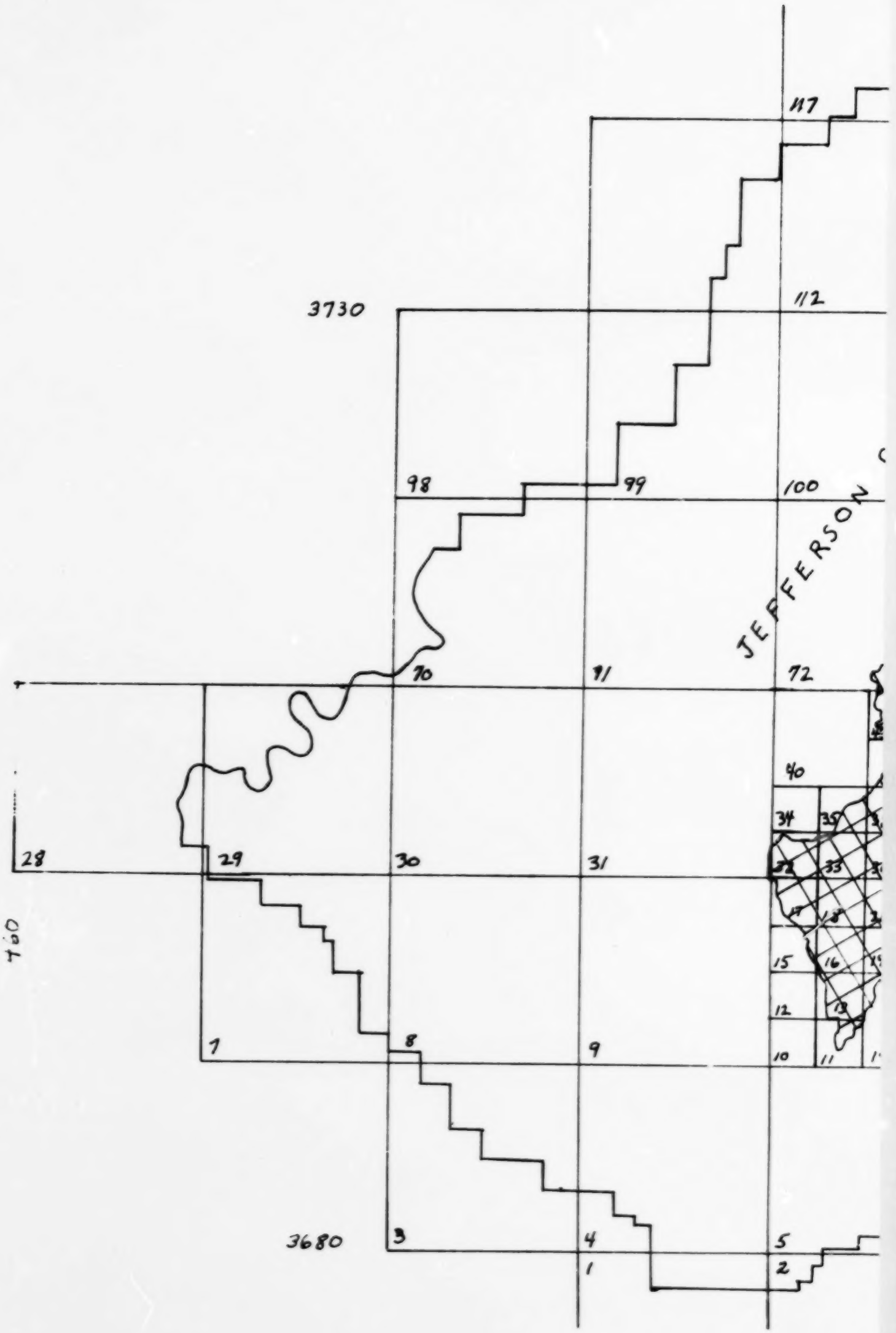


Area Source Grid Network - Metropolitan Mobile

B

A


117
112
3730
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99
100
JEFFERSON
70
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72
40
34
35
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29
30
31
T60
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11
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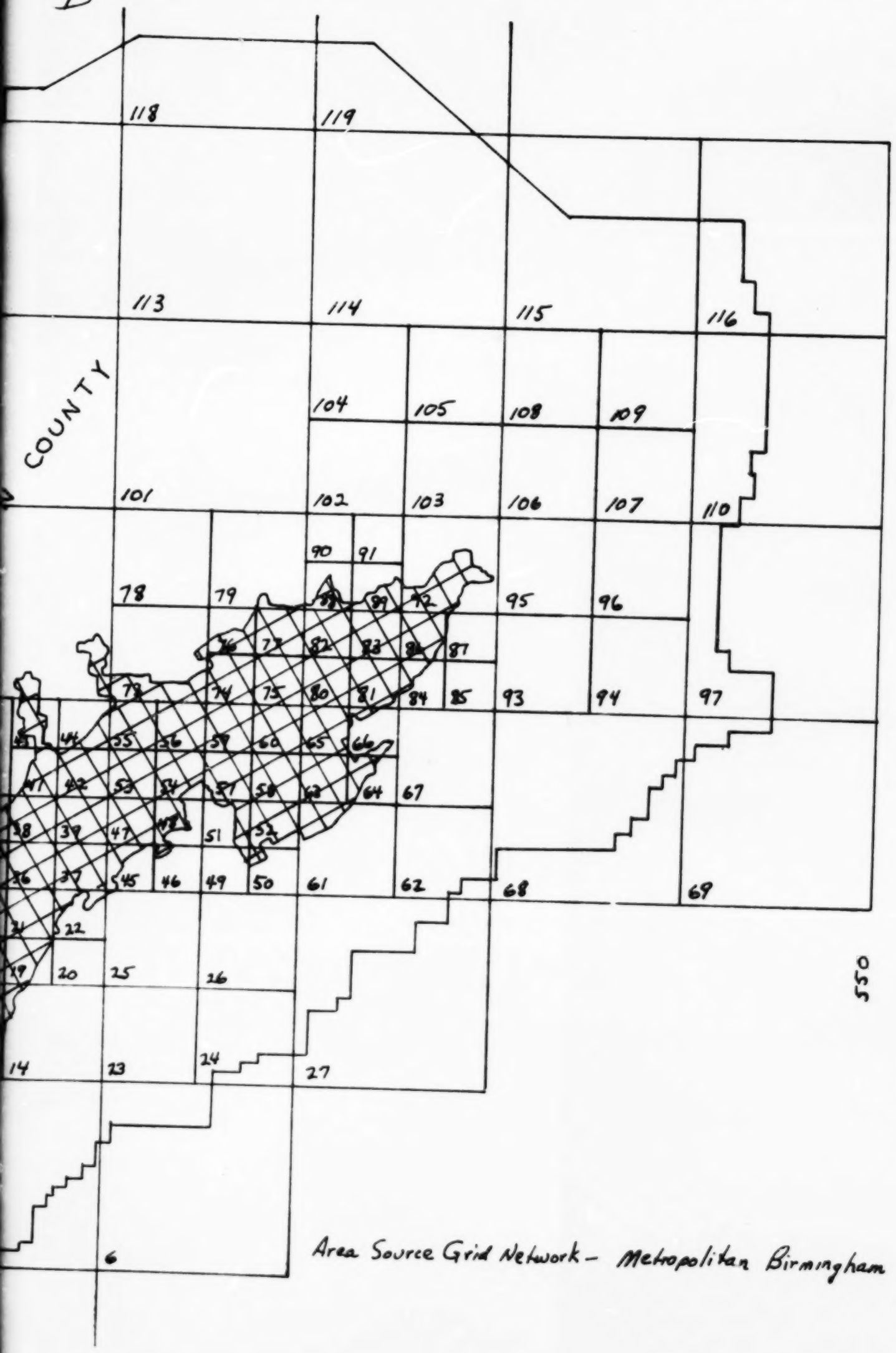
3
4
5
1
2

B



Area Source Grid Network – Metropolitan Birmingham